152

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Laptop User

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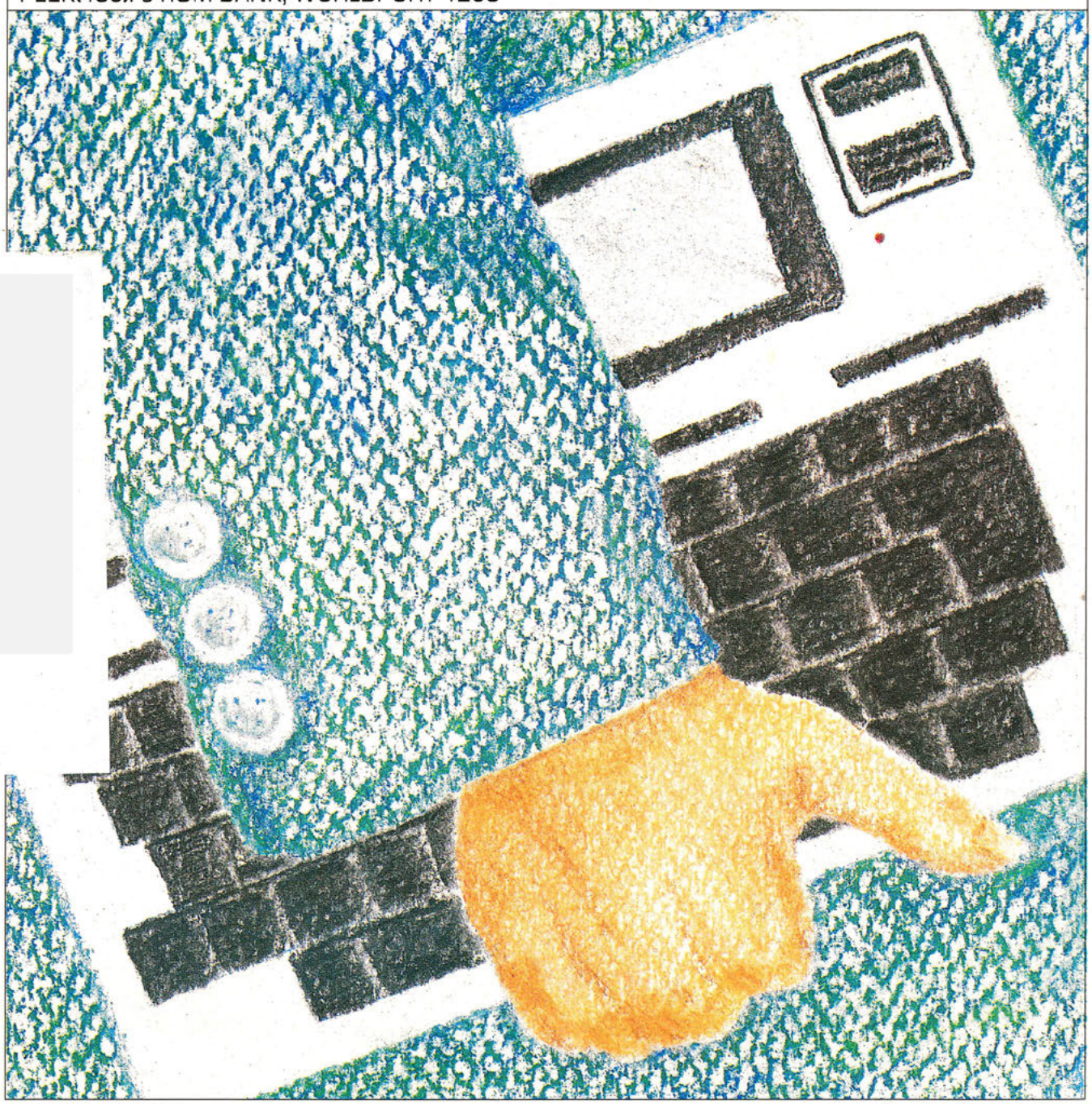

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VOLUME I, NUMBER 1

MARCH/APRIL 1987

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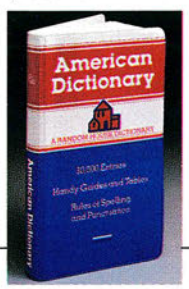

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VOLUME 1, NUMBER 1

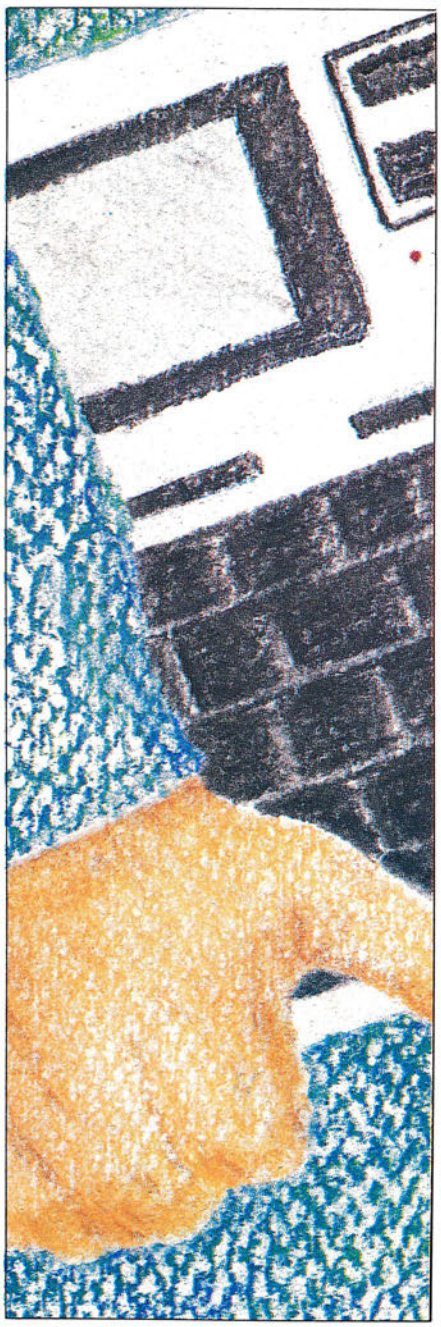
Laptop User

FEATURES

11 **Overcoming the Eight-Line Barrier** BY DAVID P. SUMNER
With a couple of POKEs and a CALL or two, you can give your Model 100 or Tandy 102 a 16-line virtual display. The president of Micro Demon shows how to review information, store data while programming, and build help screens into your software.

15 **EM8SIG Automates E-mail** BY MARVIN M. MILLER
Electronic mail is one of the most convenient ways to communicate with other laptop users. But all too often you wind up burning connect-time dollars while formatting messages and complying with CompuServe's arcane command structure. EM8SIG makes it easy.

22 **Integrated Accounting for Your Laptop** BY JON KAPLAN
Who says the Model 100 is too puny to handle a double-entry bookkeeping and accounting system? Not us! Here's a series of programs for setting up your own books. Come April 15, you'll wish you'd had this program last year. A type-and-use selection.



DEPARTMENTS & COLUMNS

3 **Laptopping**
Credit where credit is due department. We explain who really started this magazine.

4 **Feedback Loop**
Also known as letters to the editor. This month: advice from readers who heard about our impending launch.

8 **Laptop News**
Don't worry about high-end, PC-compatible portables. They're still too big and clunky, and they still cost too much.

10 **Laptop Products**
New products help you get more out of your computer. This month: Tandy introduces the Portable Disk Drive 2.

38 **PEEK(100): WorldPort 1200**
Here's one man's opinion of the Touchbase Systems 1200-bps portable modem. Bottom line: Buy it.

40 **PEEK(100): 6 ROM Bank**
A quick look at the PCSG multiple-bank ROM accessory. You may not need one today, but there could be one in your future.

42 **Laptop Users**
Notebook computer owners share ideas you can use. This month: laptops in psychology, environmental control and sales.

Laptop User

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User groups may be eligible for affiliation with Club 100. Contact Sherrie Provoda at (617) 745-7027 for details.

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Laptopping

I've looked forward to this moment for as long as I can remember. Here it is: I'm writing the first words of the first issue of the first magazine I can really call my own. It's something most editors only dream about.

But I have an admission to make. This magazine wasn't my idea. I've had just enough experience in publishing to know that starting a computer magazine takes a ton of money plus a solid year of market research and prelaunch positioning. Sometimes even that isn't enough — witness the recent magazine deaths at Time Inc.

So although I could see the need for a new monthly to serve the notebook computer community, I laughed when my wife suggested that we form a company to launch one. In the most irritatingly condescending way possible I explained to her that it simply couldn't be done.

She'll never let me forget it.

April worked with the third-party hardware and software vendors in the market to compile a mailing list. She presold advertising space so we could hire a staff and open an office. She wrote a business plan based on a creative strategy that would let us start off running, with a larger circulation base than any magazine that has ever served the portable computer market. And — hardest of all — she convinced me that it was a realistic goal that we should pursue.

You're holding the fruits of her labors. It's a thinnish package, somewhat short of the 64 pages we'd hoped for. (That's because some of the advertisers we'd counted on decided to adopt a wait-and-see attitude instead of buying a pig in a poke. It's a responsible attitude, and we understand it. We think when they see this issue they'll come around.) But it's chock full of programs, BASIC tips, reviews and news.

Your response to this magazine will ultimately determine its success or failure. So far we've succeeded beyond our dreams. Last December we barged into a CompuServe Model 100 Forum conference and announced to about a dozen people that we would be starting the magazine. Since then we've received more than 400 written requests for subscriptions.

Many of you have volunteered that you'd be willing to pay for the magazine. Thanks, but no thanks. We're committed to reaching the entire laptop community. If you want to help, join Club 100 (advertised on page 14). You'll find that your membership pays for itself many times over.

The other thing you can do is to tell vendors where you heard about their products when you call to order them or request information. Whether you're responding to an ad or review in *Laptop User,* in *Portable 100,* in *PCM,* in *Pico,* or in *80 Micro,* make a point of telling the vendor how you heard about his product.

People often ask me how I view *Laptop User*'s competitors in the magazine market. I always give the same response: They're not the enemy; the Toshiba 1100 Plus is the enemy. As PC-compatible laptops become more useful and less costly, the notebook computer community could lose its brightest stars. Developers of commercial and public-domain products for our computers could move on, leaving our laptops in a no-man's-land of obsolescence.

Luckily, there's no sign of it happening. As long as magazines continue to deliver information about new products to vendors and data about users' needs to developers, we'll continue to see enhancements that stretch our laptops' capabilities. That two-way communication is, ultimately, our reason for publishing *Laptop User.*

Our next issue will reach you in May. See you then.

J.D. Hildebrand
Editor

Feedback Loop

We announced the imminent publication of Laptop User *on a Sunday morning in December on the Model 100 forum on CompuServe. Although only a dozen or so laptop users attended the conference, we subsequently received more than 350 requests for subscriptions. A few of the letters are reproduced below.*

In the future, this column will be somewhat less self-congratulatory and much more useful. It's here that we'll answer readers' questions about programming, interfacing, telecommunications and other subjects. Send your letters to Laptop User, *Pickering Wharf, P.O. Box 712, Salem, MA 01970. Or send them via CompuServe or MCI Mail to CIS ID 73717,2674. —Ed.*

My Model 100, which I use with a Tandy Portable Disk Drive, is both a workhorse and a hobby horse. In my work as a field service engineer I travel and perform repairs on instruments that are usually found in laboratories. On the job, I use the 100 for parts inventory, customer database, formula computations, and occasional RS-232 data acquisition. During off hours the biggest application is a home budget program which I am still writing. Other times we use it for games, typing tutor programs, and math practice for my children.

I am an intermediate-level BASIC programmer, and need to know more about using Model 100 ROM calls. I am also curious about all those Z-80 or 80C85 ports addressable with INP and OUT commands in BASIC.

My Model 100 interests lean more to software projects than hardware modifications. The most I got into hardware was expanding from 8K to 32K. Someday, if the price is ever right, I may get one of the multi-ROMs that are available.

I am neither the newspaper reporter who had to look up Radio Shack in the yellow pages to find out where to buy his computer nor the techie who has five disassembled computers laid out on his workbench. In terms of who you will write your magazine for, I hope to be in the fattest part of the bell curve.
Julian Pjuck
Houston, Texas

My Model 100 sees a lot of use at work at Pacific Bell, at home and at night school. At Pac Bell I build, test and maintain digital carrier systems, remote test facilities, alarm systems and the like, covering a large part of Los Angeles and Ventura counties. My laptop sure is handy for writing reports and storing data. Instead of handing the boss hard-to-read handwritten notes, I give him a report dashed off on my TTX printer. So far I've managed to hook my Model 100 directly to only one of my pieces of test gear, but I'm working on the others. I've just scratched the surface on uses for my machine at work.

At home I use it to get free programs from CompuServe, for word processing and for work brought home from Pac Bell. If the Model 100 had a WordStar-like WYSIWYG screen setup, my Kaypro 4 would probably never get turned on.

From time to time I attend college night classes, where the Model 100 really earns its batteries. It fits neatly on a desk and allows me to take quick, legible, organized notes in class while other students frantically scribble with pen or pencil.

Of course, like most Model 100 users I look enviously at IBM-flavored laptops, and eventually I'll upgrade. But I sure love my 100!
Joe Stodgel
Arleta, California

I purchased my Model 100 last May when the prices dropped, subscribing to *Portable 100* within 10 days. Needless to say, I have not been happy with the results.

I have discovered the Model 100, though it does have some limitations, offers the ability to do just about all the jobs needed to accomplish my personal and professional goals.

I work in an office with many 100s. Most are used professionally, as portable terminals in the field, for expense and vehicle accounting, for record keeping and for word processing. Some are for personal use.

A freelancer I work with bought a Tandy 102 and disk drive just because he saw how much it simplified my office environment. He now uses it for invoicing and business communications. He is one of the people who could benefit from a magazine with a column for novices. He is eager but neither of us has the time for me to give him tutorials on each application he wants to use. I expect there are quite a few people in the same boat.

Sure hope the advertisers discover your address!
Gary Gardiner
Westerville, Ohio

To: *sole* owner, Shoestring Publications.

Sorry about the *sole* pun. It's a weakness of mine, and I couldn't resist playing on words that *tie* in with the company name. You'll probably find my future correspondence *laced* with *tongue*-in-cheek references, keeping *instep* with my warped sense of humor. Please don't *boot* me off your mailing list — I already feel like such a *heel!* God, I hope I'm not dumb enough to actually mail this....

Yup! I am.
Mike Nugent
Monroe, Minnesota

No need to apologize for your letter, Mike. We all got a kick out of it. Other magazines may be kind of strait-laced about their letters departments, but you don't have to toe the line with us. —Ed.

I have a 32K Model 100 with the Tandy Portable Disk Drive. I use PowrDOS with it almost exclusively. I have an Epson MX-100 and a daisywheel printer. My only ROM is Multiplan. I also have a Radio Shack Model 4 with three floppy drives and a hard drive, a Corona transportable with two drives, a Color Computer, and an MC-10. I also think there's a PC-4 and a Timex somewhere in a drawer, unless somehow I had the good sense to throw them away.

I use the Model 100 extensively in my work, both as a word processor (notes and sales-call records that I modem back to the office or to my home computer) and — with original programming — to demonstrate the equipment I sell. At a recent national convention here in Houston, I must have seen 30 Model 100s in various booths hooked up to instrumentation for demonstration purposes.

In *Laptop User* I'd like to see some hardware and interfacing information as well as some BASIC programming articles. One of the things I'd love to see is the Alpha interface board as a build-it-yourself project. You can see from the pictures there's nothing to them. Information on real-world interfacing of the Model 100 is absolutely nonexistent!

The owner profile for the Model 100 is rapidly changing. When the machine was $800, only writers and people who could get their company to buy it owned one. I wanted one for years, but couldn't cost-justify it.

But the writers and their like have now moved to the 200 and 600, and the $400 Model 100 is drawing a new breed of user — hobbyists and hackers. This is something the software vendors had better wake up to, as many of [their products] are overpriced for this market.

James S. Haselwood
Houston, Texas

Please start my subscription to your new publication. Presently I use a 32K Model 100, a CCR-82 cassette recorder and a DMP-105 printer. But I plan to buy the Tandy Disk Drive in the very near future.

I read about your publication in the [CompuServe] Model 100 SIG, and it sounds great. Since *Portable 100* faded away, we portable users need a magazine such as yours.

Best of luck. And thanks.

Phillip D. Fisher
Rantoul, Illinois

I would really like to receive your new publication, *Laptop User*. Good luck on your new venture. We're all pulling for you!

Tim Barber
Chapel Hill, North Carolina

Sign me up for a subscription to *Laptop User* magazine.

I own a Tandy 102 (32K), Tandy Portable Disk Drive, and have no optional ROM installed. However, I plan to purchase a powerful BASIC editor and a machine language disassembler from Polar Engineering and Consulting in Alaska in the near future.

My portable computer lets me do some programming tasks away from my Apple II Plus, and it serves as a telecommunications tool. I am hearing impaired; the 102 allows me the independence to do my work from home.

We also have a Tandy 200 which we often interface with a Macintosh XL for file transfer. The 200 contains Ultimate ROM II from Traveling Software. The primary use of this machine is to simplify some tasks for my father, who uses it at work as a program manager at GTE Western Communication Systems.

Cris Agnew
San Jose, California

I saw your comments on the recent Model 100 SIG conference on CompuServe concerning your new magazine. I would very much like to be on your mailing list.

I use a Model 100 with a 96K RAM upgrade from Portable Computer Support Group (but I may upgrade soon to a PG Designs 256K RAM). I have Super ROM, Sigea's X-Tel, and an A&J Micro Drive for mass storage. The A&J Micro Drive is used little now, since with X-Tel I can easily use my IBM-compatible Kaypro PC for file storage.

I am a psychologist who teaches and does research in a university, and works as a freelance consultant. I use the 100 in a variety of ways: to write proposals (with Lucid), to do work on the commuter train to New York, to work away from home when traveling, to communicate via CompuServe, and as an extra computer for my wife or research assistant when the PC is in use.

I'm looking forward to your publication. Good luck!

Richard Wener
Maplewood, New Jersey

It has been some time since I have read anything devoted to the 100, so I'm looking forward to your publication. I'm always on the lookout for quality items and support for my computer, and it looks like *Laptop User* will be just that. Thank you for allowing us Model 100 users the chance to receive your publication free.

Eric E. Fehrenbacher
Fort Worth, Texas

I'm a reporter for a daily newspaper and do some freelancing on the side. The only computer I own is a 32K Model 100, which I use with an Okidata 92 printer. The main software I use is Scripsit 100; WC.BA, a word-count program I got from the SIG; and FXTXT.100 (also from the SIG), which I use to remove line feeds from the stuff I download from CompuServe. I also use a terminal program, SXM, to upload stuff to a local BBS occasionally. I've got quite a bit of other software, but this

is the stuff I use most frequently.

I bought a Model 100 because I needed a computer and decided to follow the following philosophy: Buy the cheapest machine that will do what you need to do right now. My theory was that I could buy a machine with a lot more capabilities, but by the time I got around to figuring out or needing the machine's advanced functions, the same capability would be available for a lot less.

So far it's proved to be a very good philosophy. Every now and then I lust after a more powerful machine, but there's really nothing I've had to do that couldn't be done on this machine. I've even written the manuscript for an as-yet unpublished book on my Model 100.

Paul DeGroot
Edmonton, Alberta, Canada

Having read computer magazines of various types since the early days of the TRS-80 Model 1, I have some ideas about what a computer magazine should be.

I think your core elements of tutorials, reviews, useful code and application stories [described on CompuServe's Model 100 special interest group] sound good. Of course you can't please all the people all the time, but to be successful you must please almost all the people some of the time. In other words, if your magazine has something for everyone (or almost everyone) in every issue, everyone should be relatively happy.

Different types of people are looking for different things. When I first got a computer, I was still in school. Being a student, I barely managed to scrape up enough money for the computer, and really had nothing left for programs and such. Finding programming easy and fun (not everyone does), I searched magazines for programming technique articles and programs to type in — even very long ones. I found that typing in other people's programs was my greatest help in learning to program. It allows you to analyze techniques that you probably wouldn't notice otherwise, and it's good for learning debugging too. Now that I've learned a lot about programming this is less important.

I've always found hardware articles fascinating. I've never built anything elaborate yet, but I usually read these things anyway. Hardware articles don't necessarily always need to be too technical. Maybe you have to explain how to solder a wire to a connector sometimes, but readers who are so inclined will appreciate such articles.

Who buys Model 100s? I don't know if a gigantic proportion are bought by writers. The one thing I *have* noticed is that an amazing proportion of Model 100 owners seem to have another computer as well. This is confirmed by the high interest in file transfer to desktops here on the SIG.

These people, if interested in programming, mainly look for what what makes portables' programming unique. Also, as you say, magazine readers are enthusiasts and it would be a mistake not to provide in-depth coverage for those who want it.

Positioning is what makes your product unique in the marketplace. You can't specialize in everything. You already have a clear concept of what will make your magazine different from other magazines, which is great. I'd like to just mention what makes magazines different from online services such as CompuServe.

- Pictures — Magazines are obviously much more visually oriented. You can put in photographs: what the screen looks like during a certain procedure, how to install memory chips yourself.
- Advertisements — I often spend more time reading the ads than reading the editorial.
- Typography and design — These carry more nuances than the ASCII text that's available online. Good design is very worthwhile.

"Expert use of popular software" articles are useful for those who have these packages, and are probably more informative to a prospective buyer than the average review is.

I think people like to be told how wonderful computers are, or more specifically how wonderful their own model of computer is and what it can do. Although I think most people are somewhat interested in promising new technology, a full page on a new laptop is too much.

Whatever you do, don't

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start talking about software for IBM portables.

What should you hope to accomplish with your magazine? A comment from the conference of a couple weeks back sums things up nicely: "helpin' dumb amateurs in getting more use out of this wonderful and magical machine."

Neil Wick
CIS ID 71056,613

Most of the software I use is from the CompuServe Model 100 SIG or programs I have written for work-related problems. (I'm in cable television engineering.) I've been very happy with Custom Software's Menutility, and I also have the Business Analyst ROM from PCSG.

In addition, I have the 100 tied to an amateur radio terminal node controller for use on ham radio packet communications.

I have a second portable at work — the Kaypro 2000. I use the FLTIBM program from the SIG for data transfer between the two machines and store Model 100 programs on the Kaypro's 3.5-inch disks. I have over 600K of Model 100 programs on disk at this time.

We've needed a good Model 100 magazine for some time. Good luck.

Steven C. Johnson
Littleton, Colorado

Hooray! Just downloaded your announcement of *Laptop User* and am delighted you are a risk-taker! Sign me up. I would even pay money to keep it going, if it comes to that.

I'm a psychologist who extensively uses the Model 100 to write and print out my diagnostic reports. I regularly approach the byte limit in my eight-to-nine pagers, but so far have refused to pay $ for bigger memory. I aspire to write longer things, but don't know how to string them together to print out!

I frequently use the 100 to upload test scores to ARION (a CompuServe service) and download test interpretations. I'd be interested in how to do several at once without running out of memory, signing off, freeing up RAM and logging on again. I'd also like to create or buy a program that would let me load up short clusters of characters into individual keys; this would save time on ARION uploads. And I need to learn how to use TS-Random to call up prewritten sentences to load into a report.

So apparently my nontechnical interest is how to use what I have more flexibly, quickly and creatively. I have no objections to copying or buying (rather than writing) programs for my specialized uses.

How about an attachment to enable just two ROMs, not a whole bank of six? Or the possibility of getting together a bunch of users who could order some company to put on one ROM the programs we writers need — DOS, text processor, spelling checker, search and replace...?

Best of luck.

Phil Caracena
Colorado Springs, Colorado

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PLEASE CIRCLE NO. 6 ON READER SERVICE CARD

BY J.D. HILDEBRAND

Laptop News

Vendors of IBM PC-compatible laptops are (finally) enjoying substantial growth in sales as prices drop and Japanese component suppliers eliminate many of the compromises portability formerly imposed.

TOSHIBA 1100 PLUS

Experts agree that the best-selling MS-DOS laptop on the market is Toshiba's 1100 Plus, a 10-pound, $1,999 unit that comes with 256K of RAM and one or two 720K microfloppy disk drives. "With this machine, the portable computer has arrived," is the typical response from Peter Hensel, a software developer at Portable Computer Solutions in Cambridge, Massachusetts.

The main drawback to the 1100 Plus is its 25-line, 80-character LCD, which provides unimpressive contrast. "The screen is last year's technology," opines Tom O'Brien, president of retail store Portable Computers in Rochester, New York.

Nonetheless, the 1100 Plus continues to sell well. Most industry observers expect Toshiba to release an enhanced LCD option by the middle of 1987.

ZENITH Z-181

Battling Toshiba for first place in the high-end laptop market is Zenith Data Systems, which offers the Z-181. "It's safe to say that the Z-181 has the best battery-powered screen on the market," says Portable Computer Solutions' Hensel. "It's absolutely gorgeous."

Tom O'Brien agrees: "Put one on the desk next to a Toshiba 1100 Plus and there's no contest."

Except for its display, the Z-181 has little going for it. Configured with 640K and two 720K microfloppy disk drives, it retails for $2,399 and weighs in at a hefty 11.75 pounds. Its processor crawls compared to desktop computers and some laptops, and its keyboard lacks complete compatibility with the IBM standard. Bottom line: It's too slow, too big and too hard to carry. Call it a B-.

NEC MULTI-SPEED

The sleeper in the laptop market is the NEC Multi-Speed, a $1,995 unit that should prove to be a good seller. The 11.25-pound computer comes with 640K of RAM and two 720K microfloppy disk drives. Like the Model 100 family, it comes with applications programs built into ROM: a word processor, outline-type thought processor, an automatic telephone dialer and a telecommunications program that works with an external modem or an optional 300/1,200-bps internal modem.

The Multi-Speed's 25-line, 80-character LCD, like the Z-181's, is composed of super-twist liquid-crystal molecules, but it isn't backlit. Still, experts who have seen the product say it provides more than adequate contrast and viewing angle.

A key advantage of the Multi-Speed over its competitors is its removable LCD. The laptop has an IBM-compatible composite monitor port built in as standard equipment. "Remove the LCD, plug in a CRT and you've got a powerful desktop computer, completely compatible with the IBM PC," says Peter O'Connor, president of Executive Computers in Manhattan.

Also giving the Multi-Speed a competitive advantage are its keyboard — which includes a separate numeric keypad for number crunchers — and auxiliary ROM sockets for plug-in applications programs.

Portable Computers' Tom O'Brien agrees that the Multi-Speed is a winner. "It's the best keyboard in the portable market, bar none," he says. "The processor is fast, the packaging is excellent and the 512K ROM capacity is a bonus."

Even with the lackluster screen, the Multi-Speed is "clearly my favorite in the mid-priced portables," O'Brien reports. "It's my personal choice."

ALSO-RANS

Justifiably overlooked in the MS-DOS laptop market is IBM's newly enhanced PC Convertible, which still costs too much and offers no serious competition to Toshiba, Zenith and NEC. And the Wang LapTop, which has an internal 10MB hard disk but no internal floppy drive, isn't turning many heads either. It costs $3,530, weighs 14.25 pounds and requires AC power.

SILVER LININGS DEPT.

IBM hasn't disappointed *everyone* in the laptop market. Harry Brawley, president of Weston, Massachusetts-based Sigea Systems, reports that IBM has embraced Sigea's Telecommuter as a tool for demonstrating the Convertible's ease of use to prospective buyers.

"IBM periodically brings in a group of corporate buyers to demonstrate the Convertible," Brawley says. "So hundreds of people are now being exposed to Telecommuter." Sigea's word processing-plus-telecommunications program was based on the Model 100's TEXT and TELCOM, and provides MS-DOS computer users with advanced functions in a system that's as easy and intuitive to use as a Model 100.

Telecommuter, which includes a null modem and a unique Fast File Transfer feature for shuttling data between laptops and desktop computers, is worth consideration for anyone who uses a laptop occasionally as a peripheral to a desktop computer. The quality of its word processing (it's the program we use for writing and editing *Laptop User*) is a bonus.

Contact Sigea Systems, 19 Pelham Road, Weston, MA 02193, (617) 647-1099.

CIRCLE NO. 60

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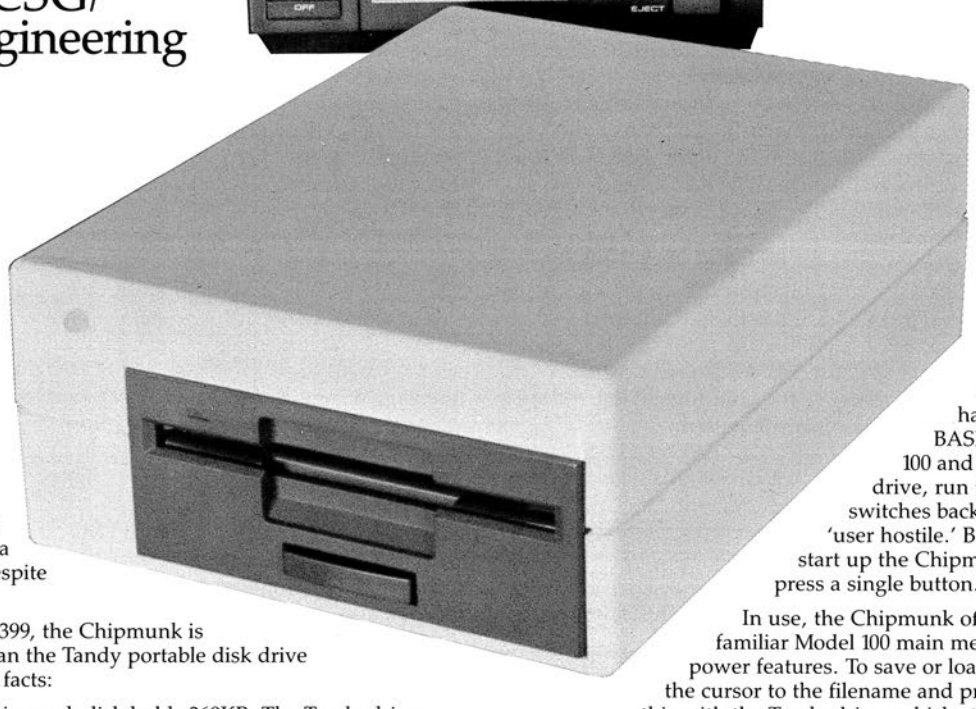


We support Tandy products, and normally we think they're great, but compared to the Chipmunk, the Tandy disk drive is a mere toy. A simple comparison of their specifica tions proves it. But because the Tandy drive is much cheaper you may be tempted to think its a reasonable choice despite its inferiority.

The truth is that at $399, the Chipmunk is plain better value than the Tandy portable disk drive at $199. Here are the facts:

1. Capacity. Each Chipmunk disk holds 360KB. The Tandy drive capacity is only 101KB. This means that for every Chipmunk diskette you buy,you would have to buy 3½ diskettes for the Tandy. These diskettes cost over $50.00 for a box of 10. It doesn't take a computer to figure out that the Chipmunk can save you a bunch on diskettes.

2. Speed. Operation of the Chipmunk is virtually instantaneous. Over 6 times faster than the Tandy drive. This because the Chipmunk technology is inherently superior. It taps directly into the system bus of your Model 100, while the Tandy drive is limited by the slow bottleneck of the serial interface. If you have used a cassette recorder to store your files, you already know the frustration of waiting for a save or load.

3. Power. The Chipmunk automatically provides sophisticated extensions to the Model 100 BASIC that provide true random access on the disk. Random access is the major theoretical advantage of disk storage over tape storage. The Tandy drive lacks random access from BASIC. In fact BASIC can't read or write on the Tandy drive at all! In this respect the Tandy drive is inferior to even a humble cassette player, while the Chipmunk is equivalent to an IBM PC disk drive.

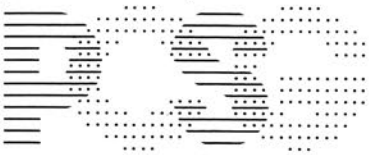
4. Rechargeable batteries. Battery life on the Tandy drive is specified at just 2 hours of continuous use. Then you need to buy a new set. The Chipmunk has built in NiCad batteries which automatically recharge whenever you have the AC adapter connected. Incidentally the batteries are included on the Chipmunk.

5. Ease of use. You may find this difficult to believe, but in order to get the Tandy drive going, you have to type a little 3 line BASIC program into your Model 100 and reset some switches on the drive, run the program and then set the switches back. This is wincing known as 'user hostile.' But you'll love the way you start up the Chipmunk. Just plug it in and press a single button.

In use, the Chipmunk offers you a menu just like the familiar Model 100 main menu but with lots of added power features. To save or load any file you simply move the cursor to the filename and press a function key. Contrast this with the Tandy drive, which steps back a software generation by demanding that you type in the entire file name every time!

Whats more, the Chipmunk comes bundled with lots of powerful free application software. The Tandy drive doesn't include any applications at all.

Life is already full of minor inconveniences and frustrations. Who needs to punish themselves with the Tandy drive? The Chipmunk from PCSG represents superior value, superior technology and superior ease of use. And it's even easier to buy! Just pick up the phone and call us. We accept all the major credit cards, or you can order COD.



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PLEASE CIRCLE NO. 8 ON READER SERVICE CARD

Laptop Products

TANDY INTRODUCES ENHANCED DISK DRIVE

Tandy Corp./Radio Shack announced on February 2 that it would bring to market the Tandy Portable Disk Drive 2, which the company calls "an enhanced version of the previous portable disk drive."

The $199.95 TDD2 stores 200K of data per 3.5-inch diskette, compared to the TDD's 100K per disk.

Otherwise, the 1.875-pound drive seems pretty much identical to the original, according to users who have seen it. The unit operates on four AA batteries or an optional AC adapter. Tandy claims the drive will run continuously for 1.5 hours on a fresh set of alkaline batteries.

Like Tandy's original drive, the TDD2 connects to the Model 100, Tandy 102 or Tandy 200 via the RS-232 serial interface via a supplied cable. So sophisticated features offered by other drives, including random access to data, will not ordinarily be supported. Data is transferred to and from the drive at 19,200 bits per second.

The new drive comes with its own version of FLOPPY.CO, an operating system that allows it to function much like a high-speed cassette tape data storage device. Beta testers report that the new drive is able to read 100K disks created with the original TDD. However, the TDD does not read or write TDD2 disks.

The original 100K TDD is available from Radio Shack and other sources at close-out prices as low as $99.

Further information on the new disk drive (cat. no. 26-3814) is available from Tandy Corp./Radio Shack, One Tandy Center, Fort Worth, TX 76102, (817) 390-3000.

CIRCLE NO. 50

BAR CODE ON A ROM

Optical Data Systems of Escondido, California has introduced BAR+, an add-on ROM that converts the Model 100/102 into a versatile bar code system.

With BAR+ and a bar code wand — available from Tandy or from Optical Data Systems — the Model 100 is able to read LOGMARS, HIBC, AIAG, UPC, Code 2 of 5, Code 3 of 9 and other industry-standard bar codes.

According to Optical Data Systems, the $195 ROM also lets the Model 100 print bar codes on Radio Shack DMP printers, including the DMP-130, DMP-200, DMP-430 and DMP-2100.

A built-in calculator program helps in totaling inventory and dollar values while scanning, and is also usable separately. A file manager stores, organizes and retrieves information. And a barcoded keypad lets users type numbers into the computer by drawing the wand across a bar code — much faster than hunting and pecking.

In addition to its ROM product, which fits into the auxiliary ROM socket located under the hatch on the bottom of the Model 100/102, Optical Data Systems markets three laptop-compatible bar code scanners, with prices starting at $99.

Contact Optical Data Systems, P.O. Box 1987, Escondido, CA 92025, (619) 745-6563.

CIRCLE NO. 51

TRAVELING LANDS A SPELL CHECKER

Traveling Software, in concert with Random House Inc. and Wang Laboratories, has introduced Sardine, a pocket dictionary for laptop computers.

According to Traveling Software, the program is able to check the spelling of words in a document without exiting from the text editor. The program allows users to add new words to the dictionary, and alerts the user to the presence of accidentally repeated words even if they are spelled correctly.

The program is available in two versions.

The $99.95 disk version, which contains the Random House American pocket dictionary of 33,000 words, requires the use of Traveling Software's multifunction Ultimate ROM II. It works with the Tandy Portable Disk Drive as well as the new TDD2. Sardine requires a special version of Ultimate ROM II, which is included with the spelling checker at no additional cost to current Ultimate ROM II users.

The second version of Sardine squeezes a ROM into the can. The ROM chip includes Traveling Software's T-Word word processor plus a list of 7,000 commonly misspelled words compiled by Wang Laboratories in a two-year study of business correspondence. The $169.95 ROM version also includes the 33,000-word Random House pocket dictionary on a 3.5-inch diskette.

Traveling Software has also begun shipping TS-RANDOM, a random-access operating system for the TDD, TDD2 and Purple Computing portable disk drives.

Like Sardine, TS-RANDOM is available on either disk ($89.95) or ROM chip ($119). The program adds extensions to the BASIC programming language built into the Model 100, Tandy 102, Tandy 200 and NEC PC-8201. The operating system also works with Traveling Software's Ultimate ROM II.

According to Traveling Software, TS-RANDOM allows random access to multiple files stored on a single disk. Supported disk formats allow the user to store information in 400 to 1,600 records per disk, and to access information from any record without scanning through the entire disk to find it, as is required with other operating systems.

Contact Traveling Software, 19310 North Creek Parkway, Bothell, WA 98011, (800) 343-8080, or (206) 483-8088 in Washington.

CIRCLE NO. 52

Overcoming the Eight-Line Barrier

Some people feel that the Model 100/102's weakest element is its tiny eight-line, 40-character display. Commercial and user-generated programs have been developed to improve the situation by displaying 60 characters on each line, meeting with some measure of success and popularity. The solution presented this month represents another approach. We'll tackle the problem by expanding the accessible data display area from eight lines to 16.

First, an admission. It isn't possible to display 16 lines of readable text on the Model 100's LCD *all at once* through software alone. But this month's program effectively doubles the size of the computer's display for purposes of displaying data from a program.

The effect we're looking for is this: The user runs a BASIC program. As the program runs, the screen fills up with data, and after a while much of the earlier data scrolls off the screen. But because the program uses our new trick, the user simply presses a key and — lo and behold — the program pauses for a second and what appears on the screen is the *previous* eight lines of the display. The effect is much like a split-screen 16-line display.

Let's begin with an example that shows how to produce this effect in your own programs. Just type in Program 1 and run it.

It doesn't do much. In fact, it simply prints the square roots of the integers from one to 100. Big deal, right?

Well, just let the program run for a moment, then press F1. You will see the program pause, and the previous eight lines of output will appear on the display! Now press Enter and you will see the most recent screen's worth of output.

HOW IT WORKS

The key to the program's effect lies in the action of several of the Model 100's built-in ROM routines.

At address 17909 is a routine that TELCOM's Terminal program uses to back up a line of the display into a special buffer area. The Terminal program takes this action whenever you are accessing a database or another computer.

Address 21795 holds a routine that performs the action of the previous screen key (F1) in TELCOM's Terminal program. If you recall, you see the previous screen of data whenever you press F1 in Terminal mode.

Address 63040 contains the cursor's current position (from one to eight). If the number stored here is an eight, then the program is about to print on the last line of the display.

The routine at 16974 simply turns off the cursor so that output won't be jerky. To see why you need this call, just try running the program after removing the CALL 16974 command from line 2000.

What we are doing here is mimicking the actions of TELCOM from within a BASIC program. The effect is that we can use the F1 key just like the F1 key of TELCOM's Terminal mode.

TAKING IT APART

Now consider the program line by line. Lines five and six clear both the display and the previous screen buffer. After the visible screen is cleared with CLS, the eight calls to 17909 place eight blank lines into the previous screen buffer so that it is cleared out too.

Also in these two lines we set things up so that pressing F1 will cause the program to call the subroutine at line 2000.

The loop in lines 10 to 40 simply prints each number from one to 100 followed by its square root. Notice that each PRINT statement is preceded by a call to the subroutine at line 3000. This subroutine first PEEKs into location 63040 to see on what line the PRINT statement will operate. If it is not the last line, then the program simply RETURNs and does nothing. If the PRINT is about to occur on the bottom line, then the program CALLs 17909 to place the top line into the previous screen buffer before the data scrolls off into oblivion.

Whenever the user presses F1, the program branches to the subroutine at line 3000. This section of the program calls the ROM routine at 21795, which displays the contents of the previous screen buffer and waits for the user to press a key. After the key press, the ROM routine returns control to the program.

At this point the user once again sees the initial screen. A test at line 2030 waits for the user to press another key — any key — before continuing. As an option, line 2030 could be omitted.

One caveat: It is important that the program prints a full line of data for this technique to work as expected. If you put a semicolon or comma at the end of the PRINT statement in line 20, the program will not function properly. The reason for this is that printing on the last line of the display would no longer necessarily make the top line scroll off. You can still use the technique in such a situation, but you'll have to modify the procedure somewhat.

SOME EXPERIMENTS

You may better appreciate what this program accomplishes and how if you perform a few simple experiments of your own. For instance, try taking out portions of the program to see why they are needed. In general, it is good advice to temporarily remove a portion of a program if you want to see why it is necessary.

Try this: Go to the MENU and note the time on the display. Now go into BASIC, type CALL 21795 and press Enter.

You should see a bunch of junk appear on the screen. Hidden in the junk is the time that was on the clock when you exited the MENU and entered BASIC. You can see from this that the previous

screen buffer is used for other purposes besides TELCOM and our new program. When you are in the MENU, your Model 100 is using this portion of memory to store such things as the time.

If you want to perform further experiments, it may be helpful to know that the address of the previous screen buffer is 64704 to 65023. The actual screen itself is stored at 65024 to 65343.

You can put data directly into the previous screen buffer by POKEing it there. Try this, for example:

```
10 A$ = "HELLO"
20 FOR I = 1 TO 5
22 POKE 64704 + I, ASC(MID$(A$,I,1))
24 NEXT I
30 CALL 21795
```

This little program POKEs the ASCII values for the string "HELLO" into the first line of the previous screen buffer. Then after the call to 21795 in line 30 you should see "HELLO" on the top line of the screen.

LISTING 1

```
    5 CLS
      : ON KEY GOSUB 2000
      : KEY ON
    6 FOR I = 1 TO 8
      : CALL 17909
      : NEXT I
   10 FOR I = 1 TO 100
   20 GOSUB 3000
      : PRINT I; SQR(I)
   30 NEXT I
   40 END
 2000 CALL 21795
      : CALL 16974
 2030 X$ = INKEY$
      : IF X$ = "" THEN 2030
 2040 RETURN
 3000 IF PEEK(63040) = 8 THEN CALL 17909
 3010 RETURN
```

LISTING 2

```
    5 GOSUB 1000
   10 FOR I = 0 TO 7
      : PRINT A$(I)
      : IF I = 6 THEN CALL 17909
   12 NEXT I
   15 FOR I = 0 TO 6
      : CALL 17909
      : PRINT
      : NEXT I
   30 CLS
   40 END
 1000 FOR I = 0 TO 7
      : READ A$(I)
      : NEXT I
 1010 RETURN
 2000 DATA "The buffer area is at 64704"
 2010 DATA "--------------------------"
 2020 DATA "CALL 21795 to see the data"
 2030 DATA "--------------------------"
 2040 DATA "CALL 17909 to back up a line"
 2050 DATA "----------------------------"
 2060 DATA "My CIS ID is 75515,1507"
 2070 DATA "----------------------"
```

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PLEASE CIRCLE NO. 3 ON READER SERVICE CARD

OTHER APPLICATIONS

Uses for this ROM call readily present themselves. For example, you could store a screen's worth of data in the previous screen buffer and then access it whenever you like by CALLing 21975. This would allow you to build help screens into your programs, or to store information about programs you are working on during development and debugging.

It's a good idea to define a function key to CALL 21795 automatically. Not only will this greatly simplify the process of accessing your help screen, but it also circumvents the problems that could result from CALLing the wrong address as the result of a typographical error.

Program 2 is a simple help screen application that illustrates the idea. To use the program, just replace each line in the DATA statements with text that you want to appear when you press F2.

When you run the program it will place the data that you want to keep handy into the previous screen buffer. To make it easy to access this information, define F2 (or whatever key you like) by typing:

```
KEY 2,"CALL 21795" + CHR$(13)
```

Note that the CHR$(13) adds a carriage return to the function key definition so you don't have to press Enter after pressing F2.

Now when you press F2 you should see the contents of the previous screen buffer appear on the display until you press a key.

You can use your new F2 key to keep tabs on what's being placed in the previous screen buffer. After finishing a session on CompuServe or Delphi, you'll find that F2 will show you a portion of what was on the display when you signed off. You may discover that some of your software is storing information there temporarily.

Of course the F2 function we just defined only works if no BASIC program is running. If you want to be able to look at the information from within a BASIC program, add lines like these:

```
10 ON KEY GOSUB 1000: KEY ON
 .
 .
 .
1000 CALL 21795
1010 RETURN
```

There are certainly other potential uses for these ROM routines. I'll leave it to your imagination to find them. I would appreciate it, though, if you would let me know of our ideas. Send your comments to David P. Sumner, care of *Laptop User,* P.O. Box 712, Salem, MA 01970. Or contact me directly on CompuServe; my ID is 75515,1507.◀

David P. Sumner is the president of Micro Demon, a leading developer of applications and utility software for the Model 100 family.

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EM8SIG Automates CompuServe E-Mail

EM8SIG is a menu and function-key driven program offering fully automated composing, sending, and receiving of both CompuServe EasyPlex electronic mail and Forum (SIG) messages. Designed for both the occasional novice user and the experienced high-tech volume user, it saves time and money.

EM8SIG lets you prepare EasyPlex and Model 100 SIG messages offline. You're prompted for all the information required to deliver your message, and the text is properly formatted for EasyPlex or Forum communications. You can stop worrying about IDs, maximum line lengths, headings and "save" commands.

In addition to providing an interactive "front end" to CompuServe, EM8SIG allows you to instruct your Model 100/102 to log on at preset times — including late at night when both CompuServe connect rates and telephone company charges are lower.

If your CompuServe, Tymnet or Telenet connection returns a busy signal, EM8SIG will hang up and redial a user-specified number of times before giving up.

You can store outgoing messages in RAM (including auxiliary banks), Chipmunk disk drives, cassette tapes or in your CompuServe PER area. Outgoing messages can be sent to multiple recipients automatically. Downloaded messages can be stored automatically in RAM, on a Chipmunk disk, on a cassette tape or on a printout.

Despite its name, EM8SIG does more than send and receive electronic mail. It can also be used to download user-designated message threads or individual messages, no matter who they're addressed to. The program stores CompuServe's "New Message" headers to permit offline review and selection of which messages to download. The program also creates a file called CISUSE that shows the exact duration of message transmission and retrieval, plus CompuServe's billing time.

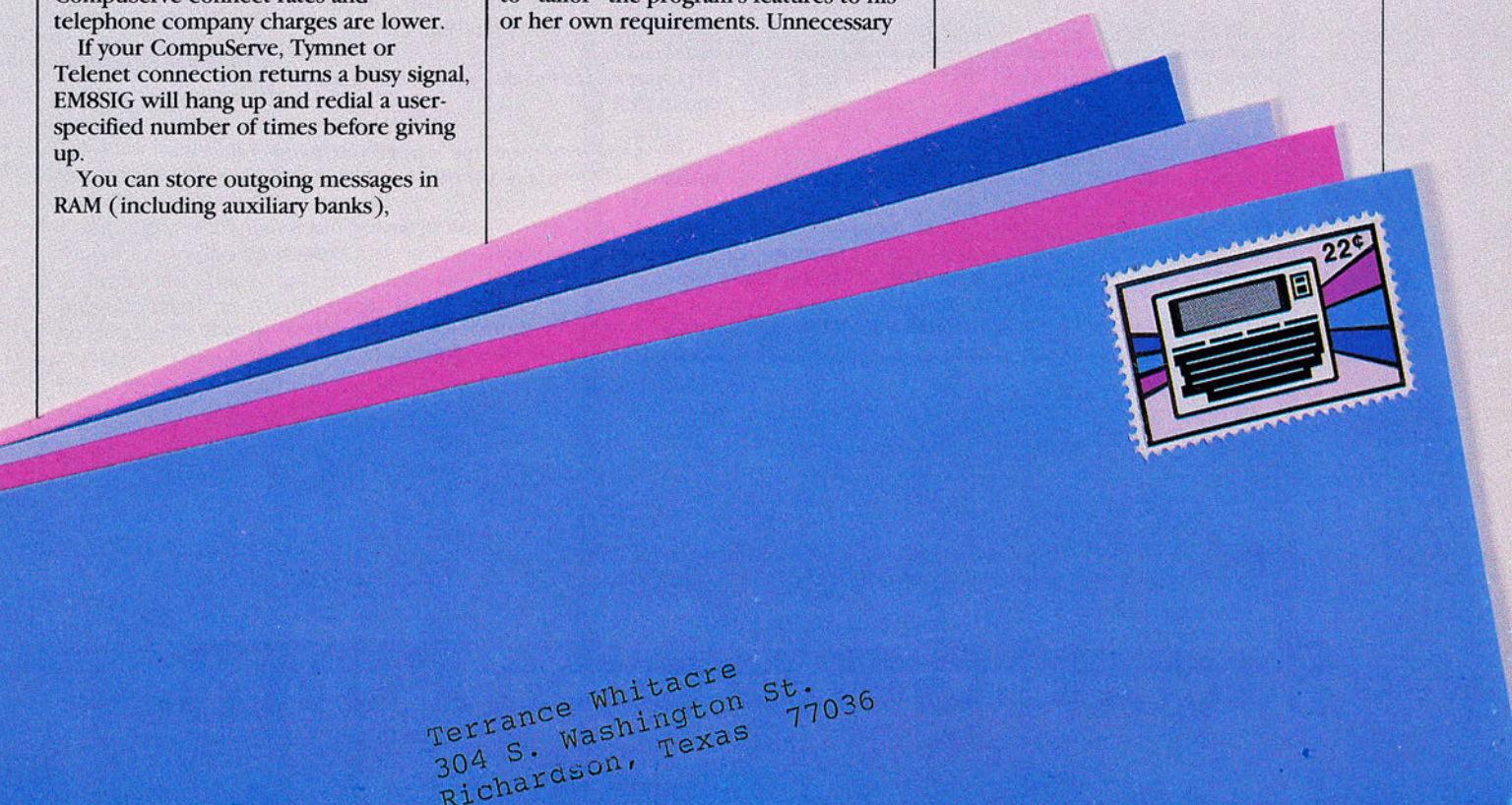
GETTING STARTED

EM8SIG is designed to allow each user to "tailor" the program's features to his or her own requirements. Unnecessary options can be deleted to save memory space.

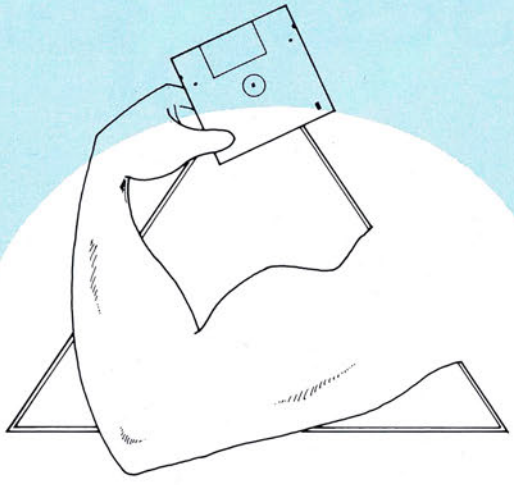
The first step in using the program is to personalize it by selecting the Option Menus located at the beginning of the program. This is the only way the user should make any changes to the program.

The program permits the menu selection of alternative CompuServe access phone numbers and the time of auto-CompuServe access. These features are accessible from the main menus which appear after the User Option menu and submenus.

In the event of a busy signal (or no answer), EM8SIG will automatically hang up, wait, and redial until a connection with a modem-tone has been made or a user-specified number of tries has been reached. The default is 20 tries. If a connection isn't made, the program will leave the user a message, terminate and



POWR-DOS



Eight months ago, we began selling POWR-DISK, the first software to give access to the Tandy Portable Disk Drive from Model 100/Tandy 200 BASIC and TEXT. Response was enthusiastic. Today, POWR-DISK still offers a great value in Disk-Drive software. But if you want ***real*** power for your Drive—you want POWR-DOS.

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Second Generation POWR

PLEASE CIRCLE NO. 1 ON READER SERVICE CARD

return to the main menu (or run an IPL program if you prefer).

LOGON FORMAT

CompuServe access phone numbers are stored in a user-specified file in the following formats:

- CIS1Hou:2252330<=A?mCIS^M?U75665,312^M?Ppass*word^M?C>:

- MANcupsHou:4<=A?mCIS^M?U75665,312^M?Ppass&word^M?C>:

It is essential the logon sequence use the "?U" and the "?P" prompts before and after the user's ID as shown.

ID FORMATS

Message recipients' IDs are stored in a file of your choice, which can be the same or a different file from the CompuServe access phone numbers. Use the following formats:

-]David Burnet 76010,426
- Dave Mitchell Box 6286 Salt Lake UT 84106-0286 [76576,2033

The close-bracket (]) can be anyplace within the line; everything to its right will be used as the Forum message's "To:" entry. If an addressee's complete ID number is entered then that will be used for the "To:" entry.

MESSAGE FORMATS

EM8SIG permits the automatic sending of single- and multiple-addresee EasyPlex messages that have been composed offline as well as files previously uploaded to the user's CompuServe PER file area. The user no longer has to pay attention to CompuServe's line length limitations; the program takes care of that problem automatically.

Outgoing messages can now be 8,000 bytes. Messages must be in the following format:

```
to:Recipient
su:Subject
<CR>
Text text text text text.
<CR>
Grph-F

to:Recipient;Recipient2;Recipient3
<CR>
<CR>
Text text text text text.
<CR>
Grph-F
```

Note that the second message (the one addressed to three recipients) doesn't include a "su:" label. When the "su:" line is just a carriage return (blank line), it's automatically replaced with the program's default subject: "EM8SIG.100 (ver. 1.4)."

Each message is ended with one or two carriage returns (indicated above by <CR>, each on a line by itself. Messages are separated by a Grph-F on a line by itself. Don't skip a line between the Grph-F and the "to:" of the next message. The last message is terminated by a carriage return (or two).

FORWARDING FROM PER

CompuServe allows users to store text and information in personal file areas, known as PERs. It's sometimes useful to send a message from the PER to a recipient; this is the quickest way of forwarding an EasyPlex message that you have received to another user, for instance. To send a message from your PER area use this message format:

```
to#FILE.NME:Marv;Jim;PCSG;76576,2033
su:Sent from user PER
EOF symbol (or Grph-F)
```

Outgoing Forum messages can be 2,000 bytes or 96 lines long. The compose routine will alert you when this limit is being approached.

RAM POWER to TANDY LAPTOPS

DATAPAC model 102/200 external RAM cartridge includes software in option ROM which enables single directory bank access to VERY LARGE non-volitile memory space and enhancements to TEXT and BASIC. Its small 1¾" wide by 1" high tapered enclosure provides convenient "prop-up" for easier display viewing.

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PLEASE CIRCLE NO. 5 ON READER SERVICE CARD

Forum messages must be in the following format:

```
L
Recipient 12345,678
Subject
Text text text text text.
.
/EX
S0
```

Note that new messages (those using the "L" command) are ended with Sn where "n" is the Forum topic area in which the message should reside. REply messages do not require section numbers, as they are automatically sent to the same subject as the original message.

The message compose subroutine (F7) makes this complicated-seeming structure automatic and transparent to the user.

FUNCTION KEYS

EM8SIG makes full use of the Model 100/102's programmable function keys.

Shift-Break stops program execution at any time and leaves you in BASIC. Typing "GOTO 500" enters the Model 100's TELCOM program. At this point, we recommend you type a Ctrl-C before proceeding with CompuServe.

Quick-start means the Option, Access Number, and Auto-Time menus are skipped. The program goes directly to the autodial/logon routine.

FILE NAMES

The program's Option Menus allow the user to name all the program's files and to specify their location. The Model 100/102's normal six-letter file-naming convention must be followed, though it is not necessary to add ".DO" to each file name unless you are using a Chipmunk and the file has been previously saved using an extension.

File prefixes are required only when using M100/102 accessories. If an incorrect file prefix is used, the program will automatically abort with an error message plus a signoff if CompuServe has already been accessed.

User-connected data storage devices are addressed with prefixes.

Valid file names for a Chipmunk or DVI system include 1:BBS, 0:CISUSE.DO, 2:OUTSIG.DO, 0:OUT and so on. Valid Chipmunk prefixes are 0: and 1:. Valid DVI prefixes are 1:, 2: and 3:.

If you use a Tandy Portable Disk Drive or a PG Designs multiple-bank RAM unit, use file names like these: RAM:INMAIL, ADRS, OUTSIG, RAM:CISUSE.

With RAM+, banks are addressed by letter: A:ADRS, C:INMAIL, A:CISUSE.DO.

Cassette and printer are specified with LPT and CAS: CAS:MAIL, LPT:CISUSE, LPT:INMAIL.DO.

OPTION MENUS

Particulars about default file storage and access locations are stored in three Option Menus: the EasyPlex E-mail menu, the Forum/SIG Menu, and the General Menu. These menus allow the user to customize the program and further automate message transmission and retrieval. They're accessed by responding with a Y or a y to the "Review Option?" prompt on screen two.

The EasyPlex E-mail Menu stores five pieces of information. Option 1 is the name of the outgoing E-mail file. Option 2 is the name of the incoming E-mail file. Option 3 is the name of the file that contains names and ID numbers. Option 4 lets you specify what to do with internal copies of messages once they've been set — Keep or Delete. This must be set to Keep if you're using a cassette. And Option 5 lets you specify what happens to E-mail once you've read it. You may delete it from CompuServe, store it in your PER area, or just Keep it for later downloading.

The Forum/SIG Option Menu has six options. Option 1 lets you specify CompuServe navigational commands that will be executed after sending and receiving mail. Option 2 is the name of the file containing Forum command strings. Option 3 is the name of the file

```
      ********************************
      *                              *
      * Correct CIS Profile Settings *
      *   For TRS-80 Model 100/102   *
      *                              *
      ********************************

TERMINAL PARAMETERS
      1 Terminal width    80 CHARACTERS
      2 Screen size is now      0 LINES
      3 Form Feeds are             REAL
      4 Horizontal Tabs are        REAL
      5 Terminal supports  UPPER/LOWER
      6 Caps Lock is                OFF
      7 Line Feeds are             SENT
      8 Parity is                  EVEN
      9 Blank Lines are            SENT
      10 Inquire for VIDTEX is      OFF

SERVICE OPTIONS
      1 You now receive  Short prompts
      2 Paged Display is.      Disabled

LOGON ACTIONS
      1 If Mail waiting     Notify only
      2 First Service is       VIDEOTEX
      3 Automatically run    No program
```

LISTING 1

```
 0 GOTO 17'EM8SIG.100ver1.4:
   copyrightMMMILLER: 75665,312:
   12/01/86
 1 G$ = "": AO = 1
 2 A$ = INPUT$(1,1): PRINT A$;:
   G$ = G$+A$
 3 IF INSTR(G$,D$) THEN 4 ELSE
   IF INSTR(G$,X$) THEN AO = 2
   ELSE IF INSTR(G$,K$) THEN AO
   = 3 ELSE IF A$ = S$ OR A$ =
   R$ THEN 1 ELSE 2
 4 X$ = "xyx": K$ = "xyx":
   RETURN
 5 A = 0: FOR J = 1 TO LEN(AH$):
   PRINT #2, MID$(AH$,J,1);:
   PRINT INPUT$(1,1);: A = A+1:
   IF A > 115 AND MID$(AH$,J,1)
   = S$ THEN PRINT #2, R$;: A =
   0: NEXT ELSE NEXT: RETURN
 6 PRINT #3, C$: PRINT C$
 7 LINE INPUT #1, C$: IF C$ =
   DK$ THEN 38 ELSE 6
 8 C$ = "": N = 0
 9 A$ = INPUT$(1,1): PRINT #3,
   A$;: PRINT A$;: C$ = C$+A$:
   IF INSTR(C$,XR$) THEN C$ =
   "": RETURN ELSE IF A$ = S$ OR
   A$ = R$ THEN 8 ELSE 9
11 A = 0
12 IF EOF(XK) THEN C$ = "": GOTO
   15
13 C$ = INPUT$(1,XK): IF C$ = V$
   THEN 15 ELSE PRINT #2, C$;:
   PRINT INPUT$(1,1);: A = A+1
14 IF C$ = R$ THEN 11 ELSE IF Y
   = 1 AND XF = 0 THEN 12 ELSE
   IF A > 64 AND C$ = S$ THEN
   PRINT #2, B$;: GOTO 11 ELSE
   IF A > 77 THEN PRINT #2, B$;:
   GOTO 11 ELSE 12
15 IF Y = 1 THEN 16 ELSE PRINT
   #2, TIME$; B$; "/EX": D$ =
   DK$: GOSUB 1
16 RETURN
17 CLEAR 850: CLS: MAXFILES = 4:
   DEFINT A-Z: DIM M(15): DIM
   AD$(25): ONERROR GOTO 41: A$
   = "7I1E"+CHR$(0): V =
   VARPTR(A$): CALL
   6118,0,PEEK(V+1)+PEEK(V+2) *
   256: CALL 21179: POKE 63019,
   20: GOSUB 90: GOSUB 79
18 ONKEY GOSUB 109, 115, 114,
   19, 65, 61, 150, 45: KEY ON:
   GOSUB 111: GOSUB 110: GOSUB
   81: GOSUB 110: GOSUB 63:
   GOSUB 110: GOSUB 67
19 GOSUB 52: BX$ = TIME$: AX =
   0: OPEN "MDM:7I1E" FOR INPUT
   AS 1: OPEN "MDM:7I1E" FOR
   OUTPUT AS 2: KEY OFF: CLS:
   PRINT BX$: AU$ = SC$: D$ =
   "OK": X$ = "!": PRINT #2,
   XZ$: GOSUB 1: IF AO > 1 THEN
   PRINT #2, CO$; "PRO": GOSUB 1
20 ONERROR GOTO 41: AX = 1: XF =
   0: XK = 3: E = 6: OPEN BB$
   FOR INPUT AS 3
21 Y = 1: H = 0: AG = 0: ST =
   242: C$ = "": PRINT: PRINT
   P$; BK$; CD$; Q$: IF EOF(3)
   THEN ERROR 80
22 LINE INPUT #3, G$: A$ =
   CHR$(51): IF G$ = CQ$ THEN 35
   ELSE H = INSTR(G$,"#"): C =
   INSTR(G$,":"): IF H THEN DA$
   = MID$(G$,H+1,C-H-1): G$ =
   MID$(G$,C+1) ELSE IF C THEN
   G$ = MID$(G$,C+1) ELSE 22
23 FOR X = 1 TO LEN(G$): IF
   MID$(G$,X,1) = ";" THEN Y =
   Y+1: NEXT ELSE AD$(Y) =
   AD$(Y)+MID$(G$,X,1)
24 NEXT: IF H THEN DB$ = DA$
   ELSE DB$ = BI$
25 FOR X = 1 TO Y: IF
   VAL(AD$(X)) THEN 27 ELSE OPEN
   BD$ FOR INPUT AS 4
26 IF EOF(4) THEN CLOSE 4: ERROR
   81 ELSE LINE INPUT #4, G$: IF
   INSTR(G$,AD$(X)) THEN AD$(X)
   = MID$(G$,INSTR(G$,"[")+1)
   ELSE 26
27 CLOSE 4: NEXT: IF RA <> ST
   THEN CALL (31989+ST)
28 C = 0: LINE INPUT #3, AG$: C
   = INSTR(AG$,":"): IF C AND C
   < 10 THEN AK$ = MID$(AG$,C+1)
```

containing outgoing Forum messages, and Option 4 is the name of the file that should contain downloaded Forum messages. Option 5 is the name of the file that contains downloaded New Message headers. And Option 6 determines whether the program will automatically send and receive Forum mail after sending and receiving EasyPlex.

The General Option Menu contains six entries. Option 1 is the user's name. Option 2 is the user's time zone. Option 3 is the current year. Option 4 is the name of the file that should hold the error message log. Option 5 is the name of the file containing CompuServe access numbers and your automatic log-on sequence. And Option 6 is the name of the file that should contain the CompuServe use log.

AUTOMATIC COMMANDS

Two Forum commands, RM and QSN ALL, are permanently set into the program. The RM (read mail) command is called each time the Forum routine is run, while QSN ALL is run whenever the program is accessed via the F2 key *or* item 6, Option Menu 2 is set to Yes.

Additional Forum commands are selected by being placed in the Forum Command File, Item 2, Option Menu 2. Any legal CompuServe command sequence can be placed in this file.

ERROR TRAPPING

Consistent with the Model 100's basic premise, EM8SIG has been made as user-friendly as possible. Extensive error trapping and reporting are included. In addition to dealing with Model 100 messages like ?OM, the program includes its own error numbers.

Error 80 indicates that an outgoing EasyPlex E-mail file has been formatted incorrectly.

Error 81 means that the addressee's ID is not found in the specified file.

Error 82 means that no modem tone has been received after 20 redials.

Error 83 indicates that the CompuServe access phone number is not in the file specified.

Error 84 means that CompuServe has returned the error "? no current file."

Error 85 is returned when CompuServe reports "file not found."

Error 86 means CompuServe has reported "requested file not found in PER area."

Continued on page 34.

```
    ELSE AG = 1: AK$ = AT$
29  IF INSTR(E,AU$,A$) < 1 THEN 43 ELSE IF Y
    > 1 AND H < 1 THEN GOSUB 47
30  FOR X = 1 TO Y
31  PRINT #2, "R SNDMAL": D$ = "file": GOSUB
    1: IF H > 0 OR Y > 1 THEN PRINT #2, DB$:
    GOTO 33 ELSE PRINT #2, "tty:": D$ =
    "finisned.": GOSUB 1
32  GOSUB 48: PRINT #2, TIME$; B$; ".": D$ =
    ".": GOSUB 1: PRINT #2, CW$
33  D$ = "ID": X$ = "fou": GOSUB 1: IF AO >
    1 THEN ERROR 85 ELSE PRINT #2, AD$(X):
    D$ = "max": X$ = "NCF": K$ = "aga":
    GOSUB 1: IF AO > 1 THEN ERROR 84 ELSE
    PRINT #2, AK$: GOSUB 1: PRINT #2, NA$:
    D$ = DK$: GOSUB 1: AD$(X) = "": NEXT: IF
    Y > 1 AND H < 1 THEN PRINT #2, "DEL ";
    DB$: GOSUB 1
34  IF H THEN 113 ELSE IF C$ = V$ THEN 21
35  IF AD THEN U$ = BB$: GOSUB 135
36  PRINT: PRINT P$; "Read "; BA$; Q$: PRINT
    #2, "r emadmp": D$ = "]": X$ = "ting":
    GOSUB 1: IF AO > 1 THEN 43
37  OPEN BC$ FOR APPEND AS 3: PRINT #3,
    "Rec'd: "; DAY$; S$; DATE$; " -"; TIME$;
    B$; G$: GOTO 7
38  PRINT #3, CQ$; DG$; TIME$: IF AE THEN 43
39  DI$ = "email.dat": PRINT #2, "pro (4)";
    DI$: D$ = DK$: X$ = "? What": GOSUB 1:
    IF AO = 2 THEN 39 ELSE IF F$ = DH$ THEN
    PRINT #2, "REN "; DI$; " TO M";
    LEFT$(BX$,2); MID$(BX$,4,2); "M.AIL":
    GOSUB 1: GOTO 43
40  PRINT #2, "del "; DI$: GOSUB 1: GOTO 43
41  IF ERR = 52 AND ERL = 52 THEN 42 ELSE IF
    ERR = 52 THEN AD = 0: RESUME 36 ELSE 42
42  IF ERR = 80 AND H THEN RESUME 36 ELSE AD
    = 0: P = 0: PRINT "Error "; ERR; "  line
    "; ERL: CALL 21264: GOSUB 80
43  CLOSE 4: OPEN BF$ FOR APPEND AS 4: IF XP
    THEN 44 ELSE IF AX THEN IF P = 1 THEN
    DD$ = CS$: GOTO 46 ELSE IF P = 2 THEN
    PRINT #2, "GO "; DD$: GOTO 46 ELSE PRINT
    #2, CL$; CO$; "LOG" ELSE 45
44  LINE INPUT #1, G$: PRINT G$: IF
    INSTR(G$,"time") THEN BQ$ =
    RIGHT$(G$,12): PRINT #4, DATE$; S$; BX$;
    S$; TIME$; S$; BQ$ ELSE 44
45  CALL 21179: GOSUB 79: GOSUB 78: CLEAR
    250: MAXFILES = 1: MENU
```

```
46 PRINT #4, DATE$; S$; BX$; S$;
   TIME$; S$; S$; DD$: IF XA
   THEN 116 ELSE GOSUB 78: GOTO
   500
47 PRINT #2, "FIL "; BI$: D$ =
   "ready": GOSUB 1
48 GOSUB 49: GOSUB 11: RETURN
49 AH$ = B$+AT$+B$+"Sent:
   "+DAY$+S$+DATE$+S$+TIME$+TZ$+B
   $+"From:
   "+NA$+"["+ID$+B$+"Subj:
   "+AK$+B$: GOSUB 5
50 IF AG = 1 THEN AH$ = AG$:
   GOSUB 5
51 RETURN
52 ONERROR GOTO 41: CLS: FOR N =
   0 TO 15: READ M(N): NEXT:
   PRINT P$; BK$; CE$; S$; Q$:
   OPEN BE$ FOR INPUT AS 1: A$ =
   PN$: CALL
   6+VARPTR(M(0)),0,VARPTR(A$)
53 IF EOF(1) THEN ERROR 83 ELSE
   LINE INPUT #1, I$: I =
   INSTR(I$,":"): AQ$ =
   LEFT$(I$,I): CALL
   6+VARPTR(M(0)),0,VARPTR(AQ$):
   IF INSTR(AQ$,A$) = 0 THEN 53
   ELSE J = INSTR(I,I$,"<"): IF
   J = 0 THEN 53
54 PRINT LEFT$(I$,J)">";: PRINT:
   CLOSE: A$ =
   MID$(I$,I+1,J-I-1)+CHR$(0):
   ID = INSTR(I$,"U"): JD =
   INSTR(I$,"?P"): ID$ =
   MID$(I$,ID+1,JD-ID-3)
55 ONERROR GOTO 42: Z = Z+1: IF
   Z>20 THEN ERROR 82 ELSE PRINT
   "Calling "LEFT$(I$,I);: V =
   VARPTR(A$): CALL
   21293,0,PEEK(V+1)+PEEK(V+2)*25
   6: CALL 21172: PRINT: N = 0:
   X = 0
56 N = N+1: CALL
   VARPTR(M(0)),0,VARPTR(X)
57 IF X = 0 THEN 59 ELSE AQ$ =
   "": IF AQ$ = "" AND N < 500
   THEN 56 ELSE CALL 21179:
   PRINT P$; BK$; "NO CARRIER";
   Q$: N = 0
58 N = N+1: CALL 21264: IF
   INKEY$ > "" THEN RESTORE 60:
   GOTO 18 ELSE IF N<9 THEN 58
   ELSE 55
59 PRINT "CONNECT": FOR N = 1 TO
   9: BEEP: NEXT: CALL 21264: A$
   = MID$(I$,J)+CHR$(0): V =
   VARPTR(A$): CALL
   21392,60,PEEK(V+1)+PEEK(V+2)*2
   56: RETURN
60 DATA -4147, 30574, 201,
   -18562, 20424, 32291, 26147,
   4463, 2, -5683, 6449, 6865,
   -5683, 4623, 3347, -5688
61 DE$ = DG$: P = 1
62 GOSUB 110: PRINT @121, P$; "
   Program will EXIT into ";
   DE$: PRINT @171, " when
   finished "; Q$: FOR N = 0 TO
   1: BEEP: CALL 21264: NEXT:
   GOTO 19
63 PRINT @123, P$; S$; CE$; "
   AND  PASSWORD": PRINT @163, "
   IN "; BE$; " AS ?"; Q$: PRINT
   @225, CR$; PN$; S$;: PRINT
   @265, "";: INPUT PN$
64 RETURN
65 DE$ = CS$+S$+DD$: P = 2: GOTO
   62
67 ONERROR GOTO 76: PRINT @62,
   "Time:": PRINT @124, P$; S$;
   BA$; " time, or (N)ow:"; Q$;:
   N = 146: L = 0: T$ = "":
   PRINT @225, CR$; "Now";
69 PRINT @N, CHR$(239): PRINT
   @67, TIME$: A$ = INKEY$: IF
   A$ = "" THEN 69 ELSE PRINT
   @N, S$;
70 C = ASC(A$): IF C = 13 THEN
   73 ELSE IF C <> 8 AND C <> 29
   AND C <> 127 THEN L = L+1: T$
   = T$+A$: PRINT @N, A$;: N =
   N+1 ELSE IF L > 0 THEN L =
   L-1: T$ = LEFT$(T$,L): N =
   N-1: PRINT @N, S$;
72 GOTO 69
73 IF LEN(T$) < 2 THEN 78
74 ON TIME$ = T$ GOSUB 77: TIME$
   ON: I = 0: PRINT @124, P$;
   "Auto-Email set for:  "; T$; Q$
```

Listing continues on page 34.

An Integrated Accounting System for the Model 100

BY JON KAPLAN

Common wisdom tells us that the Model 100, surprisingly powerful though it is, is well suited to small tasks and can handle some jobs of moderate sophistication. But no one with an ounce of sense would set up an integrated double-entry accounting system on a 100, right?

Wrong. Jon Kaplan saw that the 100 could, with a certain amount of determination and programming skill, be converted into a complete accounting system for the home and small business, so he set out to create one. The result is the remarkably short programs that accompany this article.

It may be that we will never find the limit of the Model 100's applications and usefulness. —Ed.

GL100 is a series of small programs designed for the Model 100 for simple bookkeeping and home finance applications. It consists of three programs plus one utility program. They have been kept separate in the interest of memory conservation since they rarely are needed at the same time. The three main programs follow the bookkeeping process as outlined below.

PAPER MATE OFFICE PRODUCTS MED.
ESC
TAB
Q
W
CORPORATION • 100 S. SCHELTER RD. • LINCOLNSHIRE, ILLIN

GLCHEK is the program for entering checks, deposits and other journal entries.

GLPOST is to "post" or sort the different entries to their correct categories in the working trial balance and to print out the working trial balance.

GL100 generates an income statement and balance sheet.

The utility program, GLWTB, is for entering a chart of accounts in the format required by the programs.

GENERAL PROCEDURES

GLCHECK is used for recording checks and deposits. The file it generates, CJ.DO, should be periodically cut off and filed on disk or cassette tape for reference to keep the overall size from getting out of hand. When cutting off, make sure all the checks in the cut off section have cleared or the bank reconciliation won't work right.

You must also have a chart of accounts called WTB.DO. Use GLWTB.BAS to write your chart of accounts. Once you've written a WTB.DO, the format will be apparent to you and you may prefer to make any future additions and changes just using the Model 100 text editor.

If you aren't running a business, you may want to use GL100 as an expense sorter for single-entry bookkeeping. If so, that's all you have to do. Take your CJ.DO and post it with GLPOST and print an income statement with GL100. Print detailed listings with GLDGER. Make all your accounts income (500) or expense (800) accounts. Don't bother printing the working trial balance in GLPOST — it will be out of balance. And don't make a balance sheet with GL100, because it will be blank. All you'll have are a nice little income statement and sorted check list.

For double-entry bookkeeping you have to make a second (or "offsetting") entry. Cut off the section of the CJ.DO file you are using for the period you are closing (like this month). You should remove the starting balance, but the program will ignore it if you forget.

From here on, keep your working check files separate from your book files. As you close each month, you are dealing with a list of checks and deposits which may not match those you use for bank reconciliations because you have older outstanding checks. Use separate disks or cassettes and don't mix them up. File each month's journal under its month's name, separate from your working check records.

When you have a CJ.DO file that represents this month's transactions on your computer, call it up from GLCHEK.BAS and check the balance. Write down the total for checks and the total for deposits. Now go to the input part of the program and make your summary entries. Enter a credit (deposit) for the total of the checks. And enter a debit (check) for the total of the deposits. For description, enter something like "Jan. Cash Summary," and for date use the last date of the period. Now check the balance to make sure the check (debit) total and deposit (credit) total are equal, and the starting and ending balance will be 0.

If you need any general journal entries, just make them now with the GLCHEK input program. A general journal entry is usually a non-cash transaction that needs to be on your books. For example, if you buy a machine on time:

Debit 160 Machinery 5000.00

Credit 210 Loans Payable 5000.00

Enter your debits as checks and your credits as deposits and check the balance to be sure they are equal.

Now you can close your books for the period.

First print out a general ledger using GLDGR.BAS. Post with GLPOST and print a working trial balance with GLPOST. If an outside accountant does your taxes, he needs the general ledger and working trial balance. Later he will give you adjusting entries that you enter as general journal entries as above.

Once you are posted you can print an income statement and balance sheet with GL100.

I recommend you make copies of CJ.DO, WTB.DO and LASTMO.DO and keep them for posterity. KILL everything except WTB.DO and move on. Remember, you still have a continuous CJ.DO on the tape or disk that holds your check records.

At the end of the year you might want to run a cumulative general ledger for the year. This means to glue each month's CJ.DO together and print one big GL printout. Your accountant will love you for it. The only question is whether it will fit in memory. If not — well, that's what accountants are paid for.

When cutting and pasting CJ.DOs using TEXT, be careful of the format of the file, particularly carriage returns, including the last carriage return in the file that leaves a little arrow hanging over at the end. If you mess anything up, the program won't run. But it isn't too hard to do right.

A note on memory size: The reconciliation part of GLCHEK copies the entire CJ.DO file to a temp file while it is running. This means you must have spare memory in RAM at least equal to the size of the CJ.DO file or the program stops with an ?OM error message. Unless you're running an awful lot of checks, a little judicious memory management should keep you running clean.

USING GLCHEK

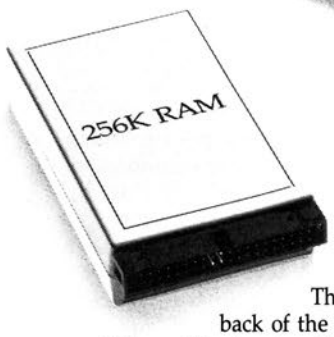
GLCHEK is a simple, no frills checkbook program. It is designed for keeping track of checks and deposits that have been manually written. It also contains a category (CAT) field for sorting checks into expense categories. GLCHEK integrates with other programs to make a complete, simple accounting system.

From the opening menu, you have six choices:

- Input Data starts the program for entering checks or deposits into a file called CJ.DO, the check journal. When first starting the program you are prompted to enter a starting balance.
- Check Balance prints the account balance and totals of checks and deposits to the screen.
- Print Journal prints a listing of all transactions along with the summary totals of checks and deposits and the account balance. There is no prompt, but the printer must be on.
- Statement Check reads off the transactions and asks you to check them against your bank statement. You are asked if the amount is correct, and can then correct the amount to that listed in the statement. You are also asked to enter an "X" for each item that has "cleared," or been listed on the statement. Each time this part of the program is run, only items that haven't been previously checked off are shown.
- Reconciliation prints out a reconciliation based on the items you

256K RAM FOR THE M102 & M100

Memory doesn't erase when you unplug it —
Buy multiple cartridges and carry them with you anywhere!



Instantly upgrade your Model 102 or your old Model 100 to 256K of RAM or use the budget unit for 160K. That little cartridge simply plugs onto the back of the Model 102. That's all there is to it. Buy several if you like, because they don't lose your files when you unplug them. (For the older type Model 100 we have a special shape that goes inside the little back compartment).

Like eight Model 102's in one.

You then have 8 banks of RAM of 32K each. The additional seven banks also work just like your Main Menu. Push a function key: you are in the second bank. Push again, the third and so forth until you are back to your original bank. Its built-in NiCad battery recharges right from the Model 102 and is guaranteed for a full year.

Copy a file from bank to bank with a function key.

Each bank is like having another Model 102. All the built-in programs and snap-in ROMs appear and work in all banks. Your widebar cursor moves from file to file and you just press ENTER.

Data files in excess of 220K.

You aren't limited to working with banks of 32K each. The ROM software included has extensions to BASIC that allow modification of programs to write and read data throughout the entire 256K. Data files can be created using all available memory, appearing to the user as one continuous 256K of RAM.

More features.

Rename or kill any file. Set the date, day and time with function key ease. Even use non-Radio Shack printers without those tricky dipswitch settings. Whenever you take out the snap-in ROM it leaves a tiny program that lets you switch banks just by pressing ENTER.

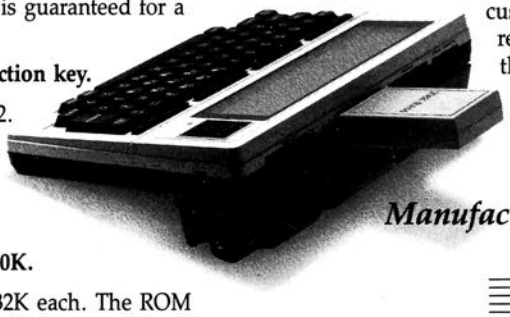
Total RAM*	128K	160K	256K
Model 100	$299	$369	$549
Model 102	—	$369	$549

**Including original 32K*

The complete system.

The small center photo is the new 256K cartridge with the PCSG/Cryptronics 6 ROM bank, that allows six software ROMs installed, plus gives 30 hours of battery power to your computer. Combine that with SuperROM and the Holmes/PCSG portable disk drive (350K on a diskette): the complete portable system.

It is truly an engineering masterpiece. Thousands of PCSG/Cryptronics memory expansions have been shipped to satisfied customers — more are installed and working reliably than any competitive product. We sell these memory expansions on a 30-day trial. Simply return it within 30 days for a full refund if you are not satisfied.



Manufactured by Cryptronics, Inc.

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have checked off. All outstanding checks are listed.

No automatic cut-off is provided, so it is suggested that periodically you cut off part of the CJ.DO file and store it separately. Just make sure there are no uncleared checks in the portion you store away. Check the ending balance of the portion you are storing and enter it as a new starting balance. Then just add the rest of the checks that you are keeping listed using TEXT. Carefully follow the format of commas and line returns and test that you've made no errors.

Once you're comfortable with this part of the program you can move on to the accounting programs that use the same files.

The input screens include a standard formatter for dates. As you enter dates they should be in "MM/DD/YY" format; the slashes will be added automatically. This standardization makes it possible to write auxiliary programs that sort information by date. The program does not check for impossible dates like "13/34/87," however; you're on your own there.

The program also checks that "CAT" numbers are correct. This means that the WTB.DO file must be present when entering checks or deposits. It helps to keep a copy of the chart of accounts handy when entering data. Wrong entries will prompt you for a correction. Blank entries won't be stored.

Also, between entries, the date will automatically reappear and the transaction number will increment by one. Either default can be accepted by hitting Enter, or be overwritten.

If you are using this program as a check register only and don't want "CAT" numbers, you can disable this function by placing an apostrophe at the beginning of program lines 1450, 1514, 1550 and 5820.

USING GLPOST

GLPOST is the posting component of GL100. It sorts through the entries in your CJ.DO journal and posts the amounts to the correct categories in the working trial balance. The opening menu gives four choices:

Post Current Period
Year End Closing
WTB Print Out
Exit

To close the end of your period (month, quarter or whatever), just push P. If your CJ.DO file is big, you can now take a break and get some coffee — this will take a bit.

When the posting process is completed, the appropriate fields in the WTB.DO file will be changed to show the activity for the period. The old WTB.DO file will still be there listed as LASTMO.DO in case you change your mind or want to do periodic statement runs before actually closing the period. If that is the case, you can return to the "unclosed" condition by killing off the WTB.DO file and recreating the old one. Just go to BASIC and enter: NAME "LASTMO.DO" AS "WTB.DO" and the world is back to where it was.

To close the year just push Y. This option closes out all the income and expense accounts to account number 410, retained earnings, clears all the debits and credits the field reserved for prior period information. The previous WTB.DO file is preserved as LASTYR.DO — it's a good idea to keep a copy on tape or disk.

Proper procedure at year end is to first do the period end, print out *all* the reports you need and then do the year end. If you forget, LASTYR.DO can be converted back to WTB.DO to make your reports. (CJ.DO is not needed for year end or working trial balance print outs, nor for either of the reports in GL100 — only period end requires CJ.DO.)

When doing a working trial balance printout the program asks you for company name and dates. The appropriate dates for a working trial balance are the beginning of the year to the period end: January 1 to June 30 1987, for example. Don't use commas as BASIC will not accept them.

After running the year end it is useful to print and keep a working trial balance for the year beginning. The working trial balance should have just one day's date: January 1 1988, for instance.

The reason for the difference in dates is that an income statement reflects activity over a period of time, while a balance sheet shows a condition at one point in time. If that doesn't make sense, go read an accounting text. If that sounds too boring (which it is), just take my word and do it this way.

Before running GLPOST, make sure you don't have old files on your menu called LASTMO.DO, LASTYR.DO or TEMP.DO, or the program will abort.

USING GL100

GL100.BAS is the report-writing program for GL100. It prints the income statement and balance sheet.

To run your reports you must have first closed out your period end using GLPOST.BAS. Do not close the year before running reports.

Once you've closed the period your WTB.DO file will have all the information needed for the reports. CJ.DO doesn't have to be in RAM during report printing, just GL100.

If you are using GL100 in a non-business environment and don't use a double-entry system (in other words, as an expense sorter for your household), don't print the balance sheet.

USING GLWTB

GLWTB is a small program for writing a chart of accounts for use with the GL100 accounting program. In order to use any sorting program to develop accounting records you must first have a chart of accounts. This program allows you to enter account titles and numbers in the format used by GLCHEK and other GL100 programs for sorting and reporting.

You are presented with two screens. One invites you to make another entry or stop. The other is an input screen, where you enter an account number, an account title and (optionally) a closing balance. The ending balance should be last year's balance, not an earlier period of this year.

Once the information is entered the program sorts sorts it in case you didn't enter it in numerical order.

After exiting you will see a file called WTB.DO (WTB stands for working trial balance). You will see that in addition to the number and title there are five numeric fields which are used for accumulating the working information for reports.

Once you understand the format used you can just use the Model 100 text editor and throw away this silly program. Just make sure you keep everything in numerical order.

The following ranges are required for use with GL100:

100-149 Current Assets
150-199 Other Assets

LISTING 1: GLCHEK.BAS

```
   1 CLEAR 1000: MAXFILES=2: GOTO 3010
1000 R=2
1010 OPEN "lcd:" FOR OUTPUT AS 2:
     ONERROR GOTO 3050
1020 OPEN "cj" FOR INPUT AS 1
1025 IF EOF(1) GOTO 1210
1027 GOSUB 5500: INPUT #1, A$, B$, C$,
     D$, E$, F, G: IF C$="SB" THEN
     SB=G-F: GOTO 1025
1040 IF R=1 AND E$ <> "" GOTO 1025
1050 FSUM=FSUM+F: GSUM=GSUM+G: IF LC >
     0 GOTO 1110
1065 IF LC=0 GOTO 1025
1070 IF F>0 THEN LPRINT TAB(43) F
1080 IF G>0 THEN LPRINT TAB(55) G
1100 GOTO 1025
1110 LPRINT TAB(3) LEFT$(A$,8); TAB(12)
     D$; TAB(18) LEFT$(B$,25);
     TAB(43);: IF F > 0 THEN LPRINT
     USING S$; F;
1140 IF G > 0 THEN LPRINT TAB(53);
     USING S$; G;
1150 LPRINT: LC=LC+1: IF LC > 54 THEN
     LPRINT CHR$(12): LC=1
1160 GOTO 1025
1210 IF LC > 0 AND R=1 GOTO 2040
1212 IF LC > 50 THEN LPRINT CHR$(12):
     LC=1
1215 IF LC=0 THEN CLS
1216 IF R=0 GOTO 1218
1217 IF R=2 THEN BAL=SB+GSUM-FSUM:
     GSUM=0: FSUM=0: R=1: GOTO 1745
1218 PRINT #2,"": PRINT #2,"Start
     Balance =";USING T$;SB: PRINT
     #2,"Total Checks  =";USING
     S$;FSUM: PRINT #2,"Total
     Deposits=";USING S$;GSUM: PRINT
     #2,"": PRINT #2,"     Balance
     =";: PRINT #2,USING
     T$;SB+GSUM-FSUM: CLOSE: IF LC > 0
     THEN LPRINT CHR$(12)
1300 INPUT "Press <CR> to Continue";Z$:
     GOTO 3010
1450 GOSUB 5000
1460 ONERROR GOTO 1610: OPEN "cj" FOR
     INPUT AS 1: CLOSE: OPEN "cj" FOR
     APPEND AS 1
1480 CLS: PRINT: PRINT: PRINT TAB(12)
     "C]heck Input": PRINT TAB(12)
     "D]eposit Input": PRINT TAB(12)
     "R]eturn to Menu"
1490 ON INSTR(" CcDdRr",INKEY$) GOTO
     1490, 1495, 1495, 1500, 1500,
     3010, 3010: GOTO 1490
1495 Q=1: CLS: PRINT "CHECK (DEBIT)":
     GOSUB 5800: GOTO 1503
1500 Q=0: CLS: PRINT "DEPOSIT
     (CREDIT)": GOSUB 5800
1503 PRINT @240,"Date";: AP$=""
1505 AP$=AP$+INKEY$: IF AP$=CHR$(13)
     GOTO 1513
1509 PRINT @246,AP$: IF LEN(A$)=8 AND
     LEN(AP$)=1 THEN A$=""
1510 IF LEN(AP$) < 2 GOTO 1505
1511 A$=A$+AP$: AP$="": PRINT
     @246,SPACE$(8): GOSUB 5800
1512 IF LEN(A$) < 8 THEN A$=A$+"/":
     GOTO 1503
1513 PRINT @240,"Description";: INPUT
     B$: GOSUB 5800
1514 PRINT @240,"Category";: INPUT C$:
     GOSUB 5800
1515 PRINT @240,"Number";: INPUT D$:
     GOSUB 5800: DM$=D$: AM$=A$
1520 PRINT @240,"Amount";: INPUT I:
     GOSUB 5800
1530 IF Q=1 THEN F=I ELSE G=I
1535 IF I=0 GOTO 8000
1540 PRINT @240,"<CR>Input or C]ancel":
     ON INSTR("Cc", INPUT$(1)) GOTO
     8000,8000
1545 IF I=0 GOTO 8000
1550 GOTO 7000
1560 PRINT #1,A$; ","; B$; ","; C$;
     ","; D$; ","; E$; ","; F; ","; G:
     GOSUB 5500: D$=STR$(1+VAL(DM$)):
     A$=AM$
1570 GOTO 1480
1610 A$=DATE$: B$="Starting Balance":
     C$="SB": E$="X": F=0: CLS: INPUT
     "Starting Balance";G: INPUT "Date
     of Starting Balance";A$: OPEN "cj"
     FOR APPEND AS 1: GOTO 1560
1730 CLS: ONERROR GOTO 3050: OPEN "cj"
     FOR INPUT AS 1: CLOSE: OPEN "lpt:"
     FOR OUTPUT AS 2
1745 IF R=1 THEN LPRINT TAB(28) "Bank
     Reconciliation": GOTO 1760
1750 LPRINT: LPRINT TAB(30) "Cash
     Journal"
```

300-349 Current Liabilities
350-399 Long Term Liabilities
400-499 Equity
500-599 Income
800-899 Expenses

Also, two specific account number/titles are required:

104 Cash In Bank
410 Retained Earnings

The mysterious missing ranges are reserved for future purposes. If you prefer different ranges, feel free, but you'll have to change the report programs that use them. It shouldn't be too hard.

If you're not sure which accounts belong in which account number range, using the following information as a guide.

- Current assets are any assets readily convertible to cash or likely to become cash in the short term, meaning less than a year. Examples: cash, accounts receivable, inventory, pre-paid expenses, short term investments.
- Other assets are assets that won't become cash for at least a year. Examples: long-term investments, notes receivable (long term promisory notes, not accounts receivable), property and equipment, buildings, land.
- Current liabilities are debts or liabilities due within the year. Examples: accounts payable, short-term notes payable, refundable deposits owed.
- Long-term liabilities are just what they sound like: mortgages, bonds and the like.
- Equity is stock or ownership interest, plus retained earnings.
- Expenses and income are pretty obvious.

If you need more accounts you can use longer numbers to create subsidiary accounts such as 10600 or 106.00 for cash in CDs. The accounts are treated as strings, not numbers.

The GL100 system is a program in evolution. It is specifically designed to allow future programs to access its data files to provide advanced accounting functions or additional reports. Please forward any comments or questions to me at *Laptop User,* P.O. Box 712, Salem, MA 01970. Or contact me on CompuServe at ID 73337,1414.◀

```
1760 LPRINT TAB(29) "As Of ";DATE$: LPRINT: LPRINT:
     LPRINT: LPRINT TAB(48) "Checks";TAB(56)
     "Deposits": LC=7: IF R=1 THEN CLOSE
1780 GOTO 1020
1790 ONERROR GOTO 3050: OPEN "cj" FOR INPUT AS 1:
     OPEN "temp" FOR OUTPUT AS 2
1820 GOSUB 5500: IF EOF(1) THEN GOTO 2000
1850 INPUT #1,A$,B$,C$,D$,E$,F,G: IF E$ <> "" GOTO
     1960
1900 CLS: IF D$ <> " " THEN PRINT: PRINT "Ck #";D$;"
     "B$
1910 IF F <> 0 THEN PRINT USING S$;F: INPUT "Correct
     Check Amount";Z
1920 IF Z <> 0 THEN F=Z: Z=0
1930 IF G <> 0 THEN PRINT USING S$;G: INPUT "Correct
     Deposit Amount";Z
1940 IF Z <> 0 THEN G=Z: Z=0
1950 INPUT" Enter X for Cleared";E$
1960 PRINT #2,A$; ","; B$; ","; C$; ","; D$; ","; E$;
     ","; F; ","; G: GOTO 1820
2000 CLOSE: KILL "cj.do": NAME "temp.do" AS "cj.do":
     GOTO 3010
2040 IF LC > 50 THEN LPRINT CHR$(12): LC=0
2100 LPRINT: LPRINT "Check Balance       =";USING
     T$;BAL: LPRINT "Outstanding Deposits=";USING
     S$;GSUM: LPRINT "Outstanding Checks  =";USING
     S$;FSUM: LPRINT
2110 LPRINT "Bank Balance Should =";USING
     T$;BAL+FSUM-GSUM: LPRINT CHR$(12): CLOSE: BAL=0:
     FSUM=0: GSUM=0: CLS: INPUT "Press <CR> to
     Continue";Z$
3010 CLEAR: S$="########.##": T$="
     $$########.##": CLS: PRINT "SELECT: ": PRINT
     TAB(10) "I]nput Data": PRINT TAB(10) "C]heck
     Balance": PRINT TAB(10) "P]rint Journal": PRINT
     TAB(10) "S]tatement Check": PRINT TAB(10)
     "R]econciliation": PRINT TAB(10) "E]xit"
3040 ON INSTR("IiCcEePpSsRr",INKEY$) GOTO
     3040,1450,1450,1010,1010,3045,3045,1730,1730,1790
     ,1790,1000,1000: GOTO 3040
3045 CLOSE: MAXFILES=1: MENU: END
3050 CLS: PRINT: PRINT: PRINT: PRINT "     THERE IS
     NO CHECK JOURNAL": INPUT "     HIT <CR> TO
     CONTINUE";Z$: GOTO 1
5000 CLS: PRINT @135,"WAIT": N=1: OPEN "wtb" FOR
     INPUT AS 2
5010 IF EOF(2) GOTO 5050
5020 LINE INPUT #2,Z$: N=N+1: GOTO 5010
5050 CLOSE #2
5100 DIM U$(N): N=1: OPEN "wtb" FOR INPUT AS 2
5120 IF EOF(2) GOTO 5150
```

```
5130 INPUT #2,U$(N),V$,U,V,W,X,Y
5140 N=N+1: GOTO 5120
5150 CLOSE #2: RETURN
5500 A$=" ": B$=" ": C$=" ": D$=" ":
     E$=" ": F=0: G=0: I=0: RETURN
5800 PRINT @40, "Date:"; A$; "        "
5810 PRINT @80, "Description:"; B$
5820 PRINT @120, "Category:"; C$
5830 PRINT @140, "Number:"; D$ + "     "
5840 PRINT @160,"Amount";USING S$;I
5850 PRINT @240,SPACE$(39)
5860 RETURN
7000 FOR M=1 TO N
7010 IF U$(M)=C$ GOTO 1560
7020 NEXT
7030 CLS: PRINT A$;" ";B$;D$
7040 PRINT "Cat#";C$: C$=""
7050 IF F > 0 THEN PRINT USING T$;F
7060 IF G > 0 THEN PRINT TAB(20) USING
     T$;G
7070 PRINT "  INVALID CATEGORY NUMBER"
7075 PRINT "<CR> to Cancel or"
7080 INPUT "  ENTER CORRECTION"; C$: IF
     C$="" GOTO 8000
7090 CLS: GOTO 7000
8000 CLS: PRINT @135,"CANCELED": FOR
     M=1 TO 100: NEXT: GOSUB 5500:
     D$=DM$: A$=AM$: GOTO 1480
```

LISTING 2: GLPOST.BAS

```
  10 MAXFILES=3: GOTO 5010
  20 CLS: PRINT @135,"Posting": OPEN
     "temp" FOR OUTPUT AS 3: OPEN "wtb"
     FOR INPUT AS 2
  30 OPEN "cj" FOR INPUT AS 1: IF
     EOF(2) THEN CLOSE: NAME "wtb.do"
     AS "lastmo.do": NAME "temp.do" AS
     "wtb.do": GOTO 5010
  40 GOSUB 4010
  50 GOSUB 4500: IF C$ <> C2$ GOTO 50
  60 FSUM=FSUM+F: GSUM=GSUM+G: GOTO 50
 150 X=FSUM: Y=GSUM: V=V+X: W=W+Y:
     PRINT #3, C2$; ","; T$; ","; U; V;
     W; X; Y: FSUM=0: GSUM=0: CLOSE #1:
     GOTO 30
 300 OPEN "wtb" FOR INPUT AS 2: CLS:
     PRINT @135,"Posting"
 310 GOSUB 4010: IF C2$ < "500" GOTO
     310
 330 VSUM=VSUM+V: WSUM=WSUM+W: IF
     EOF(2) GOTO 370
 350 GOSUB 4010: GOTO 330
 370 P=VSUM-WSUM: CLOSE: OPEN "wtb" FOR
     INPUT AS 2: OPEN "temp" FOR OUTPUT
     AS 1
 380 IF EOF(2) THEN CLOSE: NAME
     "wtb.do" AS "lastyr.do": NAME
     "temp.do" AS "wtb.do": GOTO 5010
 390 GOSUB 4000: IF C2$="410" OR
     T$="Retained Earnings" THEN V=V+P
 400 IF C2$ < "500" THEN U=U+V-W: V=0:
     W=0: X=0: Y=0
 410 IF C2$ >= "500" THEN U=0: V=0:
     W=0: X=0: Y=0
 420 GOSUB 4100: GOTO 380
 500 CLS: PRINT "  Use No Commas":
     INPUT "Enter Company Name or Title
     (use no commas)"; H$: INPUT "Enter
     Time Period"; DA$: OPEN "wtb" FOR
     INPUT AS 2: S$ = "######.##":
     LPRINT DATE$: LPRINT
     SPACE$((80-LEN(H$))/2); H$
 570 LPRINT TAB(29);"Working Trial
     Balance": LPRINT
     SPACE$((80-LEN(DA$))/2);DA$:
     LPRINT: LPRINT: LPRINT TAB(38)
     "Debits";TAB(52) "Credits":
     LPRINT: LC=7
 590 IF LC > 54 THEN LPRINT CHR$(12):
     LC=0
 600 IF EOF(2) GOTO 670
 610 GOSUB 4010: LPRINT C2$; TAB(5);
     T$;: N=0: M=U+V-W: IF M < 0 THEN
     N=-M: M=0
 640 MSUM=MSUM+M: NSUM=NSUM+N: GOSUB
     4700: GOTO 590
 670 LPRINT TAB(35); "---------";
     TAB(50); "---------": M=MSUM:
     N=NSUM: GOSUB 4700: LPRINT
     TAB(35); "=========="; TAB(50);
     "==========";: LPRINT CHR$(12):
     GOTO 5010
4000 IF EOF(2) GOTO 5010
4010 INPUT #2,C2$,T$,U,V,W,X,Y: RETURN
4100 PRINT #1,C2$; ","; T$; ","; U; V;
     W; X; Y: RETURN
4500 IF EOF(1) GOTO 150
4510 A$=" ": B$=" ": C$=" ": D$=" ":
     E$=" ": F=0: G=0: INPUT
     #1,A$,B$,C$,D$,E$,F,G: IF  C$="sb"
     THEN GOTO 4500
```

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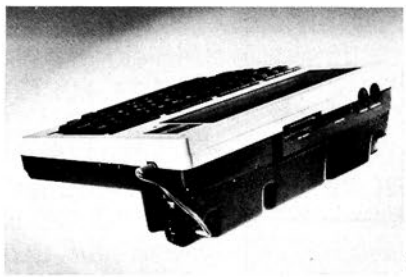

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Page 12 — *Circle No.* 3

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Page 7 — *Circle No.* 4

Club 100
Page 14

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Page 17 — *Circle No.* 5

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Page 7 — *Circle No.* 6

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Page 25 — *Circle No.* 9
Page 30 — *Circle No.* 10
Cover IV — *Circle No.* 11

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Page 44 — *Circle No.* 12

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Cover II — *Circle No.* 13
Page 1 — *Circle No.* 14

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```
4520 RETURN
4700 IF M > 0 THEN LPRINT TAB(35);USING S$;M;
4710 IF N > 0 THEN LPRINT TAB(50);USING S$;N;
4760 LPRINT: LC=LC+1: RETURN
5010 CLEAR: CLS: PRINT "SELECT:": PRINT: PRINT
     TAB(10) "P]ost Current Period": PRINT TAB(10)
     "Y]ear End Closing": PRINT TAB(10) "W]TB Print
     Out": PRINT TAB(10) "E]xit"
5040 ON INSTR("PpYyWwEe",INPUT $(1)) GOTO
     20,20,300,300,500,500,5045,5045: GOTO 5040
5045 CLOSE: MAXFILES=1: MENU: END
```

LISTING 3: GL100.BAS

```
   5 S$="######.##": GOTO 1700
  10 GOSUB 1730: GOSUB 1600: OPEN "wtb" FOR INPUT AS 1
  20 IF EOF(1) THEN CLOSE: GOTO 50
  30 GOSUB 1110: IF A$ >= "500" AND A$ < "600" THEN
     GOSUB 1510
  40  GOTO 20
  50 I1=WSUM-VSUM: I2=YSUM-XSUM: GOSUB 1600: LPRINT
     TAB(32) "Income Statement": LPRINT
     TAB((80-LEN(H$))/2);H$: LPRINT
     TAB((80-LEN(DA$))/2);DA$: LPRINT: LPRINT
  60 LPRINT TAB(30) "Year To Date"TAB(45)
     "Percent"TAB(55) "Current Period"TAB(70)
     "Percent": LPRINT "Income": LC=7: OPEN "wtb" FOR
     INPUT AS 1
  70 IF EOF(1) THEN END
  80 GOSUB 1110: IF A$ < "500" GOTO 70
  90 IF A$ < "600" THEN GOSUB 1540: GOTO 70
 100 IF A$ >= "600" GOTO 150
 120 IF EOF(1) GOTO 190
 130 GOSUB 1110: IF A$ < "800" GOTO 120
 140 GOSUB 1570: GOTO 120
 150 GOSUB 1520: LPRINT TAB(6) "Total Income";
 160 LPRINT TAB(30) USING S$;WSUM-VSUM;: IF I1 <> 0
     THEN LPRINT TAB(42) USING S$;((WSUM-VSUM) *
     100)/I1;
 170 LPRINT TAB(55) USING S$;YSUM-XSUM;: IF I2 <> 0
     THEN LPRINT TAB(67) USING S$;((YSUM-XSUM) *
     100)/I2;
 180 LPRINT: GOSUB 1520: LPRINT: LPRINT "Expenses":
     GOSUB 1600: GOSUB 1570: GOTO 120
 190 GOSUB 1520: LPRINT TAB(6) "Total
     Expenses";TAB(30) USING S$;VSUM-WSUM;: IF I1 <>
     0 THEN LPRINT TAB(42) USING S$;((VSUM-WSUM) *
     100)/I1;
 200 LPRINT TAB(55) USING S$;XSUM-YSUM;: IF I2 <> 0
     THEN LPRINT TAB(67) USING S$;((XSUM-YSUM) *
     100)/I2;
```

```
210 LPRINT: GOSUB 1520: LPRINT TAB(9)
    "Net Income"; TAB(30) USING S$;
    I1+WSUM-VSUM;: IF I1 <> 0 THEN
    LPRINT TAB(42) USING S$;
    ((I1+WSUM-VSUM) * 100)/I1;
220 LPRINT TAB(55) USING S$;
    I2+YSUM-XSUM;: IF I2 <> 0 THEN
    LPRINT TAB(67) USING S$;
    ((I2+YSUM-XSUM) * 100)/I2;
230 LPRINT: GOSUB 1530: LPRINT
    CHR$(12): CLOSE: GOTO 1700
290 GOSUB 1730: GOSUB 1600: OPEN "wtb"
    FOR INPUT AS 1
300 GOSUB 1100: IF A$ < "500" GOTO 300
310 GOSUB 1200: GOTO 300
320 CLOSE: P1=WSUM-VSUM: P2=YSUM-XSUM:
    GOSUB 1600: LPRINT TAB(33)
    "Balance Sheet": LPRINT TAB((80 -
    LEN(H$))/2) H$: LPRINT TAB((80 -
    LEN(DA$))/2) DA$: LPRINT: LPRINT
    TAB(37) "ASSETS": LPRINT: LPRINT
    "Current Assets": LC=7: OPEN "wtb"
    FOR INPUT AS 1
330 GOSUB 1100: IF A$ < "150" THEN
    GOSUB 1200: N=U+V-W: GOSUB 1000:
    GOTO 330
340 ST=USUM+VSUM-WSUM: LPRINT TAB(6)
    "Total Current Assets";: GOSUB
    1230: GOSUB 1240: LPRINT "Other
    Assets": LC=LC+1: GOTO 360
350 GOSUB 1100
360 IF A$ < "200" THEN GOSUB 1200:
    N=U+V-W: GOSUB 1000: GOTO 350
370 ST=-ST+USUM+VSUM-WSUM: LPRINT
    TAB(6) "Total Other Assets";:
    GOSUB 1230: GOSUB 1240:
    ST=USUM+VSUM-WSUM: LPRINT TAB(6)
    "Total Assets";: GOSUB 1230: GOSUB
    1250: GOSUB 1600: LPRINT: LPRINT
    TAB(35) "LIABILITIES": LC=LC+2:
    LPRINT "Current Liabilities":
    LC=LC+1: GOTO 390
380 GOSUB 1100
390 IF A$ < "350" THEN GOSUB 1200:
    N=U+W-V: GOSUB 1000: GOTO 380
395 ST=USUM+WSUM-VSUM: LPRINT TAB(6)
    "Total Current Liabilities";:
    GOSUB 1230: GOSUB 1240: LPRINT
    "Long Term Liabilities": LC=LC+1:
    GOTO 410
400 GOSUB 1100
410 IF A$ < "400" THEN GOSUB 1200:
    N=U+W-V: GOSUB 1000: GOTO 400
420 ST= -ST + USUM + WSUM - VSUM:
    LPRINT TAB(6) "Total Long Term
    Liabilities";: GOSUB 1230: GOSUB
    1240: ST = USUM + WSUM - VSUM:
    LPRINT TAB(6) "Total
    Liabilities";: GOSUB 1230: LPRINT:
    LPRINT: LPRINT "Equity": LC = LC +
    3: GOTO 440
430 GOSUB 1100
440 IF A$ = "410" OR B$ = "Retained
    Earnings" THEN W=W+P1: Y=Y+P2
450 IF A$ < "500" THEN GOSUB 1200:
    N=U+W-V: GOSUB 1000: GOTO 430
460 ST=-ST+USUM+WSUM-VSUM: LPRINT
    TAB(6) "Total Equity";: GOSUB
    1230: GOSUB 1240:
    ST=USUM+WSUM-VSUM: LPRINT TAB(6)
    "Total Liabilities & Equity";:
    GOSUB 1230: GOSUB 1250: CLOSE:
    GOTO 1700
1000 LPRINT TAB(3) B$;TAB(45);: LPRINT
    USING S$;N: LC=LC+1: IF LC > 54
    THEN LPRINT CHR$(12): LC=0
1010 RETURN
1100 IF EOF(1) GOTO 320
1110 INPUT #1,A$,B$,U,V,W,X,Y: RETURN
1200 USUM=USUM+U: VSUM=VSUM+V:
    WSUM=WSUM+W: RETURN
1230 LPRINT TAB(55) USING S$;ST:
    LC=LC+1: RETURN
1240 LPRINT TAB(55) "---------":
    LC=LC+1: RETURN
1250 LPRINT TAB(55) "=========":
    LPRINT: LC=LC+2: IF LC > 25 THEN
    LPRINT CHR$(12): LC=0
1260 RETURN
1510 USUM=USUM+U: VSUM=VSUM+V:
    WSUM=WSUM+W: XSUM=XSUM+X:
    YSUM=YSUM+Y: RETURN
1520 LPRINT TAB(30) "---------" TAB(45)
    "------" TAB(55) "---------"
    TAB(70) "------": RETURN
1530 LPRINT TAB(30) "=========" TAB(45)
    "======" TAB(55) "========="
    TAB(70) "======": RETURN
1540 LPRINT TAB(3) B$TAB(30) USING
    S$;(W-V);: IF I1 <> 0 THEN LPRINT
    TAB(42) USING S$;((W-V) * 100)/I1;
1550 LPRINT TAB(55) USING S$; (Y-X);:
```

```
     GOSUB 1510: IF I2 <> 0 THEN LPRINT
     TAB(67) USING S$; ((Y-X) *
     100)/I2;
1560 LPRINT: RETURN
1570 LPRINT TAB(3) B$ TAB(30) USING S$;
     (V-W);: IF I1 <> 0 THEN LPRINT
     TAB(42) USING S$; ((V-W) *
     100)/I1;
1580 LPRINT TAB(55) USING S$;(X-Y);:
     GOSUB 1510: IF I2 <> 0 THEN LPRINT
     TAB(67) USING S$;((X-Y) * 100)/I2;
1590 LPRINT: RETURN
1600 USUM=0: VSUM=0: WSUM=0: XSUM=0:
     YSUM=0: RETURN
1700 CLS: PRINT "SELECT REPORT": PRINT:
     PRINT
1710 PRINT TAB(10) "I]ncome Statement":
     PRINT TAB(10) "B]alance Sheet":
     PRINT TAB(10) "E]xit"
1720 ON INSTR("IiBbEe", INPUT $(1))
     GOTO 10, 10, 290, 290, 1800, 1800:
     GOTO 1720
1730 CLS: PRINT "  Use No Commas":
     INPUT "Enter Company Name or
     Title";H$: INPUT "Enter
     Date(s)";DA$: RETURN
1800 MENU
```

LISTING 4: GLWTB.BAS

```
  10 MAXFILES=2: GOTO 1100
  20 CLS: P=1: CLEAR 2000: OPEN "wtb"
     FOR INPUT AS 1
  40 IF EOF(1) GOTO 60
  50 LINE INPUT #1,Z$: N=N+1: GOTO 40
  60 DIM A$(N): CLOSE #1: OPEN "wtb"
     FOR INPUT AS 1
  70 FOR M=1 TO N: LINE INPUT #1,A$(M):
     NEXT M: CLOSE #1: CLS: PRINT
     @135,"SORTING": Q=1: GOTO 215
 210 F = 0: PRINT @135, "PASS #"; Q; "
     "
 215 FOR M=1 TO N: IF A$(M) < A$(M-1)
     THEN F=1: T$=A$(M): A$(M)=A$(M-1):
     A$(M-1)=T$
 230 PRINT @150,M: NEXT M: Q=Q+1: IF
     F=1 GOTO 210
 250 OPEN "wtb" FOR OUTPUT AS 2: FOR
     M=1 TO N: PRINT #2,A$(M): NEXT:
     CLS: MENU
 650 PRINT #2, A$(N); ","; B$(N); ",";
     U(N); V(N); W(N); X(N); Y(N):
     RETURN
1100 OPEN "wtb" FOR APPEND AS 2
1110 CLS: A$(1)="": B$(1)="": U(1)=0:
     PRINT @85,"E]nd Entries or <CR> to
     INPUT "
1120 ON INSTR("Ee",INPUT $(1)) GOTO
     1200,1200
1130 N=1: CLS: PRINT "Enter Chart of
     Accounts": INPUT "Account
     #";A$(1): INPUT "Account
     Title";B$(1): PRINT "Opening
     Balance": INPUT "Debit -Credit
     ";U(1)
1140 IF A$(1)="" OR B$(1)="" THEN CLS:
     PRINT @135,"CANCELED": FOR J=1 TO
     300: NEXT J: GOTO 1110
1150 PRINT: PRINT "C]ancel": PRINT
     "<CR> to continue": ON
     INSTR("Cc",INPUT $(1)) GOTO
     1110,1110: GOSUB 650: GOTO 1110
1200 CLOSE: GOTO 20
```


TRAVEL CASE

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PLEASE CIRCLE NO. 20 ON READER SERVICE CARD

Error 87 indicates that an outgoing Forum message file has been formatted incorrectly.

Error 88 means that CompuServe service is unavailable or busy. This message is returned when the system is "down."

USING ACOUSTING CUPS

To use the program with acoustic cups, use the following procedure:

- Place an entry in your logon file that has a 5 in place of the phone number. For example,
CUPcs:5<=A?mCIS^M?U75655,1372
^M?Ppass*word^M?C>:
- Set the DIR/ACP switch on the side of the computer to ACP.
- Enter the program and press <CR> twice. Wait until the program pauses at the Access Number prompt.
- Type: CUP
- The program will proceed, then pause at the Auto-Time prompt.
- Place the cups on the phone and dial the access number manually.
- While the number is ringing, press <CR>. The program will now log on when the call is answered by a modem. Don't worry if CompuServe answers before you can press the <CR>. Press it anyway; as long as there is a modem tone the program will logon.

MORE TIPS

If a Chipmunk is turned off while the CDOS (Chipmunk DOS) is still residing in RAM, a ?NR error will occur in line 17. Turn on the Chipmunk or remove CDOS.

Error 55, line 52 plus ?NM ERROR IN 80 will occur if the program's files are configured for PCSG's RAM+ expansion RAM and its ROM+ chip is not turned on. A simular error will occur if the program is configured for a Chipmunk or a DVI and it is not turned on.

Any device is a legitimate file prefix. Until my printer went on the fritz (grrrr, kick, howl) I used LPT: for getting a hard copy of my incoming mail. CAS:README.DO also works well.

If you have any problems, suggestions or comments, don't hesitate to drop the author a line. Those who write in will become registered users and will receive notices of program updates and changes.

The hardest part of EM8SIG.100 is setting it up for the first time. Using it is a cinch — the program does all the work for you.◀

```
75 PRINT @67, TIME$;: IF I = 0 THEN 75 ELSE
   78
76 BEEP: GOSUB 80: PRINT @280, "? Illegal
   time "; T$;: RESUME 67
77 I = 1: TIME$ OFF: RETURN
78 FOR I = 14000 TO 1000 STEP -999: SOUND
   I,3: NEXT: CLS: RETURN
79 YY$ = RIGHT$(YR$,2): DATE$ =
   LEFT$(DATE$,6)+YY$: RETURN
80 CLOSE 3: OPEN BG$ FOR APPEND AS 3: PRINT
   #3, DATE$; S$; TIME$; S$; " Error"; ERR;
   "  line"; ERL: CLOSE 3: RETURN
81 PRINT @225, CR$; "No"; P$: PRINT @125, "
   Review Options, (Y)es or (N)o "; Q$;:
   PA$ = INKEY$: IF PA$ = "" THEN 81 ELSE
   IF INSTR("Yy",PA$) THEN 82 ELSE RETURN
82 N = 1: CLS: Y$ = " is now ": W$ = " is
   in ": PRINT: PRINT: PRINT " 1 "; CB$;
   CT$; W$; BB$: PRINT " 2  "; CC$; CT$;
   W$; BC$: PRINT " 3 "; CD$; CT$; W$; BD$:
   PRINT " 4 "; CB$; CT$; Y$; SA$: PRINT "
   5 "; CS$; S$; AS$; XL$; Y$; F$: GOSUB 88
83 BH$ = INKEY$: IF BH$ = "" THEN 83 ELSE B
   = ASC(BH$): IF B > 48 AND B < 55 THEN
   CLS: GOSUB 89: EDIT 92-97 ELSE PRINT Q$:
   CLS
84 N = 2: PRINT: PRINT " 1 "; DF$; CT$; Y$;
   DD$: PRINT " 2 "; XH$; XM$; W$; XF$:
   PRINT " 3 "; CB$; CT$; W$; XA$: PRINT "
   4 "; CC$; CT$; W$; XB$: PRINT " 5 ";
   XQ$; CT$; W$; XC$: PRINT " 6 "; XK$;
   XG$; XH$; S$; "in "; DD$; S$; S$; XJ$:
   GOSUB 88
85 BH$ = INKEY$: IF BH$ = "" THEN 85 ELSE B
   = ASC(BH$): IF B = 49 THEN 170 ELSE IF B
   > 49 AND B < 55 THEN CLS: GOSUB 89: EDIT
   139-143 ELSE PRINT Q$: CLS
86 N = 3: PRINT: PRINT " 1 "; CN$; CT$; Y$;
   NA$: PRINT " 2 "; CZ$; CT$; Y$; TZ$:
   PRINT " 3 "; YN$; CT$; Y$; YR$: PRINT "
   4 "; CG$; CT$; W$; BG$: PRINT " 5 ";
   CS$; S$; CE$; CT$; W$; BE$: PRINT " 6 ";
   CS$; S$; CF$; CT$; W$; BF$: GOSUB 88
87 BH$ = INKEY$: IF BH$ = "" THEN 87 ELSE B
   = ASC(BH$): IF B > 48 AND B < 55 THEN
   CLS: GOSUB 89: EDIT 100-105 ELSE PRINT
   Q$: CLS: RETURN
88 PRINT TAB(6);: GOSUB 112: PRINT P$; CR$;
   CK$; CT$; CJ$;: IF N = 1 THEN PRINT @12,
   S$; AS$; BA$; S$: RETURN ELSE IF N = 2
```

```
    THEN PRINT @13,
    S$; XG$; XH$;: RETURN ELSE IF
    N = 3 THEN PRINT @14, "
    GENERAL ": RETURN
 89 PRINT: PRINT: PRINT CT$; ZM$;
    Q$: RETURN
 90 V$ = CHR$(130): R$ =
    CHR$(13): BI$ = "FORM.LTR":
    B$ = R$+CHR$(10): X$ = "xyx":
    K$ = "xyx": DK$ = "OK": E$ =
    CHR$(27): S$ = " ": DG$ =
    "CompuServe ": BA$ = "EMAIL":
    AT$ = "EM8SIG.100(ver1.4)":
    SD$ = "KILL": DH$ = "SAVE":
    XL$ = "FILE"
 91 CS$ = "CIS": CT$ = CHR$(9):
    CR$ = " <CR> =  ": CJ$ =
    "CHANGE # ? ": H$ = "   All
    Rights Reserved": CK$ =
    "KEEP": CL$ = CHR$(3): CO$ =
    CHR$(15): CQ$ = "Sent ": AS$
    = "EasyPlex ": XG$ = "Auto-":
    XH$ = "Forum": SS$ = " Choice
    "
 92 BB$ = "RAM:MAIL.DO": CB$ =
    "OUT MSG(s)"
 93 BC$ = "RAM:README.DO": CC$ =
    "IN MSG(s)"
 94 BD$ = "RAM:PIN.DO": CD$ =
    "OUT ID(s)"
 95 SA$ = "KILL": CH$ = "OUT
    "'KILL/KEEP
 96 F$ = "KILL": CI$ = "IN
    "'KILL/KEEP/SAVE
 97 ZM$ = "PRESS<F8><F4> AFTER
    EDIT"
 98 IF SA$ = SD$ THEN AD = 1
 99 CW$ = CHR$(26): P$ = E$+"p":
    Q$ = E$+"q": SC$ =
    "75665,312": BK$ = " Please
    wait; finding ": BA = 16 AND
    INP(187): IF BA THEN BEEP:
    PRINT: PRINT: PRINT "CHANGE
    Ans/Orig SWITCH POSITION":
    GOTO 99
100 NA$ = "Marvin M Miller": CN$
    = "NAME "
101 TZ$ = " CST": CZ$ = "TIME
    ZONE "
102 YR$ = "1986": YN$ = "CURRENT
    YEAR"
103 BE$ = "RAM:ADRS.DO": CE$ =
    "PHONE #"
104 BF$ = "RAM:CISUSE.DO": CF$ =
    "USE LOG"
105 BG$ = "RAM:EM8ERR.DO": CG$ =
    "ERROR LOG"
106 GOSUB 139
107 IF LEN(NA$) > 15 THEN CLS:
    PRINT: PRINT: PRINT P$; NA$;
    " exceeds 15 characters":
    CALL 21264: GOSUB 89: EDIT
    100
108 PN$ = CS$: XZ$ = CHR$(16):
    XW$ = CHR$(2): IF F$ = SD$ OR
    F$ = DH$ THEN AE = 0: RETURN
    ELSE AE = 1: RETURN
109 P = 0: XA = 0: XB = 0: GOTO
    19
110 CLS: GOSUB 112: PRINT @42,
    DG$; AS$; "& "; XH$; "
    (SIG)": PRINT @RA, AT$;:
    RETURN
111 CLS: GOSUB 112: RA = 242:
    PRINT @54, DG$;: PRINT @85,
    XG$; AS$; S$; S$; S$; XG$;
    XH$;: PRINT @170, AT$;: PRINT
    @RA, SC$; CT$; H$;:
    LINE(2,2)-(237,61),1,BF: CLS:
    RETURN
112 LINE(2,2)-(237,61),1,B:
    RETURN
113 IF EOF(3) THEN 35 ELSE LINE
    INPUT #3, C$: IF C$ = V$ THEN
    21 ELSE 113
114 P = 2: XA = 1: XB = 0: GOTO
    19
115 P = 2: XA = 1: XB = 1: GOTO
    19
116 ONERROR GOTO 123: CLOSE 3,4:
    Y = 1: XF = 1: XK = 4: XD$ =
    "Function:": XE$ = "Stor": D$
    = "Welc": X$ = "vail": K$ =
    "usy": GOSUB 1: GOSUB 136: U$
    = XA$: N = 3: OPEN U$ FOR
    INPUT AS 4: MM = 0
117 GOSUB 127: IF MM THEN 118
    ELSE ONERROR GOTO 122: GOSUB
    137: D$ = XW$: GOSUB 1: CALL
    21264: PRINT #2, XZ$;: D$ =
```

```
    XW$: GOSUB 1: IF C$ = V$ THEN
    PRINT #2, XZ$;: GOTO 117 ELSE
    CALL 21274: GOSUB 135
118 ONERROR GOTO 123: CALL 21274:
    XV$ = XB$: GOSUB 134: PRINT
    #2, "RM": GOSUB 129: U$ =
    XF$: N = 5: OPEN U$ FOR INPUT
    AS 4: MM = 0: GOSUB 127: IF
    MM THEN 119 ELSE GOSUB 135:
    PRINT #2, AH$: GOSUB 129
119 CALL 21274: IF XB THEN XV$ =
    XC$: GOSUB 134: PRINT #2,
    "QSN ALL": GOSUB 129
121 CALL 21274: GOSUB 133: CLOSE
    4: OPEN BF$ FOR APPEND AS 4:
    PRINT #2, "HI;L;LOG": GOTO 44
122 PRINT #2, "/EX": PRINT #2,
    "A;Y;LOG": XP = 1: GOTO 42
123 IF ERR = 52 AND N = 3 THEN
    RESUME 118 ELSE IF ERR = 52
    AND N = 5 THEN RESUME 119
    ELSE IF ERR = 58 AND ERL =
    133 THEN RESUME 130 ELSE IF
    ERL = 136 THEN 42 ELSE PRINT
    #2, CL$;: D$ = "5": GOSUB 1:
    PRINT #2, "5": GOTO 42
126 D$ = "ready": GOSUB 1: GOSUB
    11: D$ = XE$: GOSUB 1: RETURN
127 AH$ = "": LINE INPUT #4, AH$:
    IF AH$ = CQ$ THEN AH$ = "":
    CLOSE 4: MM = 1: RETURN ELSE
    RETURN
129 XR$ = XW$: GOSUB 8: CALL
    21274: D$ = XW$: PRINT #2,
    XZ$;: GOSUB 1: RETURN
130 RETURN
133 PRINT #3, S$, TIME$: CLOSE 3:
    RETURN
134 GOSUB 133: OPEN XV$ FOR
    APPEND AS 3: PRINT #3, DAY$;
    S$; DATE$; S$; TIME$: RETURN
135 CLOSE XK: OPEN U$ FOR OUTPUT
    AS XK: PRINT #XK, CQ$: CLOSE
    XK: RETURN
136 IF AO>1 THEN ERROR 88 ELSE
    PRINT #2, XZ$;: D$ = XD$:
    GOSUB 1: PRINT #2, "OP;FIL;SM
    N;RE L;S": GOSUB 1: PRINT #2,
    "OP;PC;S": D$ = "New": GOSUB
    1: PRINT #2, "^B": D$ = XW$:
    GOSUB 1: RETURN
137 XI = 0: XI$ = LEFT$(AH$,1):
    IF XI$ = "L" OR XI$ = "l"
    THEN XI = 1: D$ = "To": PRINT
    #2, "L": GOSUB 1: GOSUB 127:
    GOSUB 138: RETURN ELSE IF XI$
    = "R" OR XI$ = "r" THEN GOSUB
    138: RETURN ELSE RETURN
138 PRINT #2, AH$: IF XI THEN D$
    = "Su": GOSUB 1: GOSUB 127:
    PRINT #2, AH$: GOSUB 126:
    RETURN ELSE GOSUB 126: RETURN
139 XF$ = "RAM:CMDSIG.DO": XM$ =
    " COMMAND"
140 XA$ = "RAM:OUTSIG.DO"'msgs
    out
141 XB$ = "RAM:NEWSIG.DO"'msgs in
142 XC$ = "RAM:HDRSIG.DO": XQ$ =
    "NEW HEADERS"
143 XJ$ = "NO": XK$ = "ACTIVATE
    "'YES/NO
144 IF XJ$ = "YES" THEN P = 2: XA
    = 1: XB = 1
145 J$(1) = "M100SIG": J$(2) =
    "TRS80PRO"
146 J$(3) = "IBMNEW": J$(4) =
    "IBMCOM"
147 J$(5) = "CBMCOM": J$(6) =
    "APPLE"
148 J$(7) = "MACUS"
149 DD$ = J$(1): DF$ =
    "<F5>/"+XH$: RETURN
150 V = 0: T = 0: FB$ = "]": MJ$
    = "<CR> to RETURN to MAIN
    PROGRAM": GOSUB 168
151 D$ = "": IF T THEN GOSUB 163:
    PRINT "  More same type
    messages (Y/N)?";: GOSUB 112:
    GOSUB 90: D$ = INPUT$(1): IF
    D$ = R$ THEN 164 ELSE IF
    INSTR("Yy",D$) THEN GOSUB
    168: GOTO 154 ELSE T = 0: V =
    0: GOSUB 168
152 GOSUB 163: PRINT " Write
    E(mail) or S(ig) messages?";:
    GOSUB 112: D$ = INPUT$(1): IF
    D$ = R$ THEN 164 ELSE IF
    INSTR("Ee",D$) THEN V = 1:
    PRINT S$; BA$ ELSE PRINT S$;
    XH$: V = 0
```

```
153 PRINT: PRINT: PRINT: D$ = "":
    PRINT " Are you adding to
    existing messages ?
    (Y/N)?";: GOSUB 112: D$ =
    INPUT$(1): IF INSTR("Yy",D$)
    THEN T = 1
154 IF V THEN F$ = BB$: S = 0:
    GOTO 155 ELSE V = 0: S = 1:
    D$ = "": N = 0: CLS: PRINT:
    INPUT "RE# OR L "; D$: F$ =
    XA$: IF LEN(D$) = 0 THEN 164
155 OPEN F$ FOR APPEND AS 1:
    GOSUB 162: IF INSTR(D$,"R")
    OR INSTR(D$,"r") THEN PRINT
    #1,D$: CLS: PRINT D$: GOTO
    157 ELSE CLS: G$ = "To:": IF
    V THEN K$ = G$ ELSE K$ =
    "L"+B$: PRINT @28, FB$
156 PRINT @0, G$;: LINE INPUT "";
    D$: IF LEN(D$) = 0 THEN 164
    ELSE GOSUB 173: PRINT #1, K$;
    D$: PRINT @68, FB$: G$ =
    "Sb:": PRINT @40, G$;: LINE
    INPUT "; D$: IF V <> 1 THEN
    PRINT #1, D$ ELSE IF LEN(D$)
    = 0 THEN PRINT #1, "" ELSE
    PRINT #1, G$; D$
157 A$ = INPUT$(1): U = ASC(A$):
    N = N+1: IF V = 0 AND N >
    1600 THEN GOSUB 167 ELSE IF U
    <> 13 THEN S = 0: PRINT A$;
    ELSE S = S+1: A$ = B$: PRINT
    A$;: PRINT #1, X$;: X$ = "":
    IF S > 1 THEN PRINT #1, X$;:
    GOTO 160
158 W = LEN(X$): IF U <> 8 THEN
    X$ = X$+A$ ELSE IF W > 1 THEN
    X$ = LEFT$(X$,W-1): PRINT "
    "; CHR$(8);  ELSE X$ = ""
159 IF W > 115 THEN PRINT #1,
    X$;: X$ = "": GOTO 157 ELSE
    157
160 IF V THEN 161 ELSE PRINT #1,
    "."; B$; "/EX": INPUT
    "<S(P)n>"; D$: PRINT #1, D$:
    CLOSE 1: T = 1: GOTO 151
161 IF S <> 3 THEN PRINT #1, "":
    GOTO 157 ELSE PRINT #1, "":
    CLOSE 1: T = 1: GOTO 151
162 IF T THEN PRINT #1,
    CHR$(130): RETURN ELSE RETURN
163 CLS: PRINT @125, MJ$: PRINT
    @40, "";: RETURN
164 GOTO 17
165 S = S+1: PRINT #1, B$;: R =
    0: GOTO 157
166 S = S+1: PRINT #1, "."; B$;:
    R = 0: GOTO 157
167 BEEP: BEEP: PRINT B$; "CIS
    MSG LIMIT. YOU HAVE 150
    SPACES LEFT": BEEP: BEEP: N =
    0: RETURN
168 X$ = "": K$ = "": G$ = "": D$
    = "": RETURN
170 CLS: N = 2: PRINT Q$: PRINT:
    PRINT " 1 "; J$(1); CT$; " 2
    "; J$(2): PRINT " 3 "; J$(3);
    CT$; " 4 "; J$(4): PRINT " 5
    "; J$(5); CT$; " 6 "; J$(6):
    PRINT " 7 "; J$(7); CT$; " 8
    CHANGE SELECTIONS": PRINT:
    GOSUB 172
171 BH$ = INKEY$: IF BH$ = ""
    THEN 171 ELSE B = ASC(BH$):
    IF B = 13 THEN PRINT Q$: CLS:
    GOTO 84 ELSE IF B < 49 OR B >
    56 THEN 171 ELSE IF B = 56
    THEN CLS: GOSUB 89: EDIT
    145-148 ELSE B = B-48: DD$ =
    J$(B): PRINT Q$: CLS: GOTO 84
172 PRINT TAB(6): GOSUB 112:
    PRINT P$; CR$; J$(1); CT$;
    SS$; "# ?";: PRINT @10, S$;
    XG$; XH$; SS$;: RETURN
173 IF V OR LEN(D$) > 7 THEN
    RETURN ELSE OPEN BD$ FOR
    INPUT AS 2
174 IF EOF(2) THEN ERROR 81 ELSE
    LINE INPUT #2, IN$: IF
    INSTR(IN$,D$) THEN D$ =
    MID$(IN$,(INSTR(IN$,"]")+1)):
    CLOSE 2: RETURN ELSE 174
500 CALL 21586
```

Peek (100)

I've been playing around with the new WorldPort 1200 modem from Touchbase Systems lately. My 100 and I will never go back to 300 bps. The WorldPort 1200 brings me all the convenience and economy of 1,200-bps communications, but without compromising my laptop's portability as most external modems do. It's amazing that Touchbase was able to pack so many features into a package about the size of a deck of cards — including an internal power supply!

I upgraded my desktop computers to 1,200 bps long ago, and have come to take high-speed telecommunications for granted. So whenever I use my 100 for sending E-mail or accessing online databases I am surprised and frustrated anew at the snail's pace with which its internal modem communicates with the outside world.

With the WorldPort 1200 and Model 100 I can carry my telecommunications terminal with me wherever I go, and I don't have to sacrifice functions. In fact, the little modem has more advanced features and ease-of-use functions than any full-size modem I've ever used.

INSTALLATION

It's almost laughable to discuss installation procedures for the WorldPort 1200, it's so simple to set up. The first step is to install a supplied nine-volt battery under a hatch on the unit, much like the hatch that covers the battery compartment on the bottom of a Model 100.

Next, you may want to connect the modem to an optional AC adapter via a simple plug. If you don't use AC power, you can expect about 10 hours of connect time from a single alkaline battery.

To connect the modem to the computer, slide its male DB-25 connector onto the matching female connector used by the Model 100's RS-232 port. The hood is wider at the top than it is at the bottom, so there's no chance of plugging the unit in incorrectly.

Friction holds the modem in place; I've found the arrangement secure enough if I don't jiggle the computer too much. I tend to bang the keys pretty hard when I'm typing, but text entry doesn't create any problems for me. It probably won't for you, either.

Finally, you need to attach the modem to phone lines. A six-foot cable is supplied; it plugs into the modem at one end and into the telephone company's modular jack at the other end.

OPERATION

The WorldPort 1200 communicates with the CPU via the serial port, bypassing the computer's built-in 300-bps modem. Therefore, the Model 100's TELCOM program is unable to provide automatic dialing and log-on functions. The WorldPort 1200 must be operated manually.

If you've ever tried to operate a Hayes or Novation modem manually, you know that it's easier said than done. Complex control codes are required to get the modem to take any action, and generally you just have to guess that the action is being performed correctly. Incomprehensible combinations of status lights blink at you in arcane modem-talk. Sometimes the modem detects a carrier signal and connects, sometimes it gets some other response and disconnects, and all too often you don't know or care exactly *what* happened, but you're sure you're not communicating with anybody.

The WorldPort 1200 is easier to use by several degrees of magnitude. First, clearly labelled status lights let you know exactly what's going on at any point in a communications session.

Better yet, the modem echoes plain-English status remarks on the Model 100's LCD during use. How plain is plain? How about "Busy," "Connect" and "No Carrier"? These messages make it easy to track the status of any call.

To use the WorldPort 1200 with a Model 100, simply plug it in and enter TELCOM. There's no on/off switch to worry about; the modem automatically turns itself on when you send information to it. Set your STAT parameters to 57I1E to indicate that you want 1,200-bps communications through the 100's serial port with seven data bits, no parity, one stop bit and XON/XOFF protocol. Once your STAT parameters are set, press F4 to enter TERM.

The WorldPort 1200 accepts the same control codes as 1,200-bps modems made by Hayes — the de facto standard for modems. Commands are generally preceded by AT (for "attention"). So to dial a number, type ATDT xxxxxxx (where xxxxxxx is the phone number). The D means "dial" and the T means "tones." If your phone system accepts only the pulses provided by rotary-dial phones, the command string is ATDP.

At this point the modem will dial the phone and connect you to the host. Follow your normal manual log-on procedures.

I've used these steps successfully to log onto CompuServe and a couple of private bulletin board systems. In each instance the WorldPort 1200 performed flawlessly.

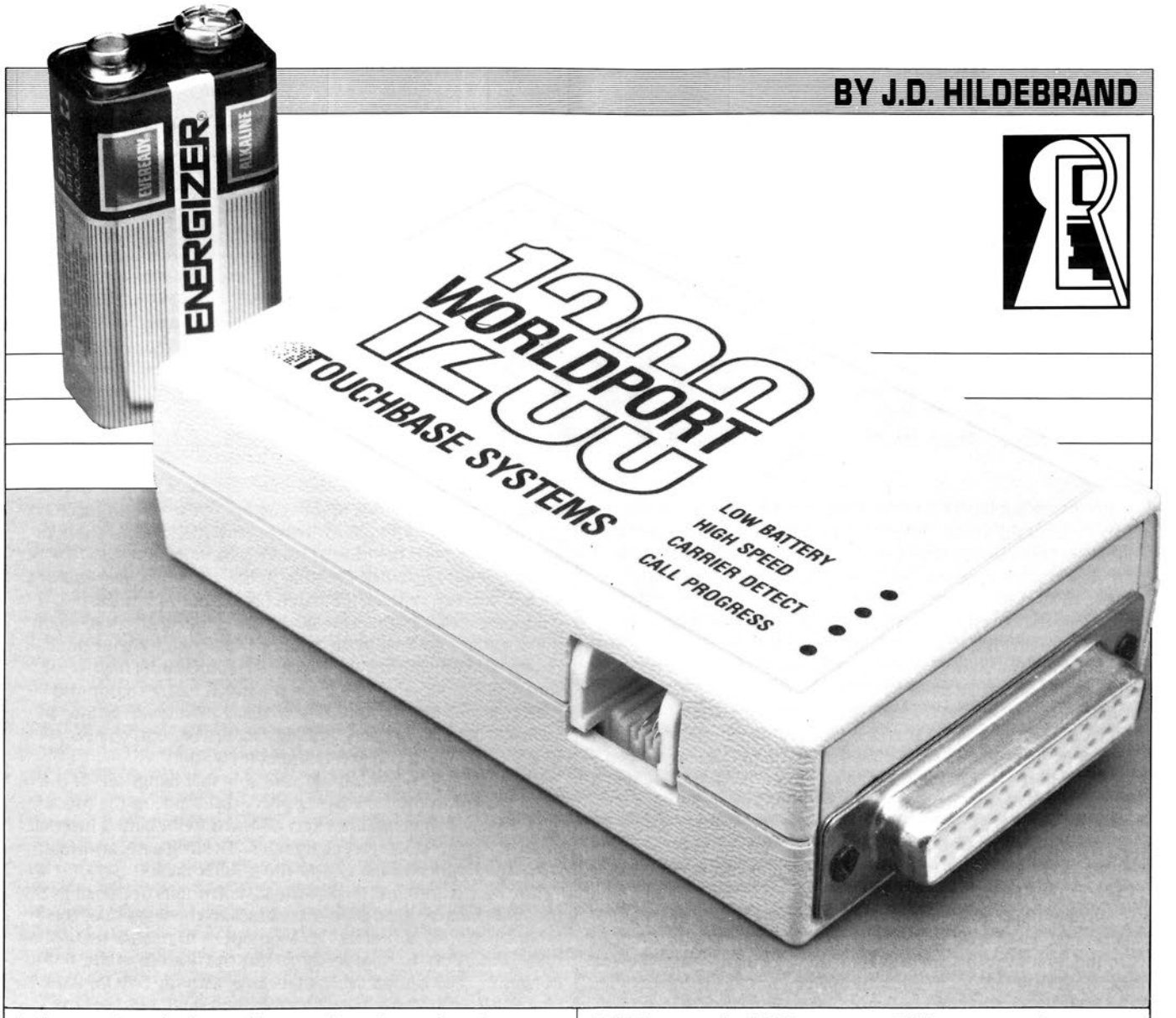
If this manual procedure seems too complicated, you can always automate it with a little BASIC programming. A short BASIC program could duplicate TELCOM's Find and Call functions easily, exiting into TERM with a CALL to the proper address in ROM.

Such a program is already available in Data Library 3 of the Model 100 Forum on CompuServe. It's called QHAYES and it works just fine with the WorldPort 1200.

ADVANCED FEATURES

If this were all the WorldPort 1200 did, it would already be worth its $199 suggested retail price. But Touchbase Systems

BY J.D. HILDEBRAND



built a number of advanced features into the product that increase its usefulness many times over.

For instance, the modem is compatible not only with the Bell 103 and Bell 212A standards used in the U.S., but also the CCITT's V.21 and V.22 protocols. This means the modem can be used overseas.

The unit offers complete auto-answer capabilities, meaning that an unattended Model 100 can record messages with a BASIC program containing the ON COM: command. With a little work, the 100 could actually serve as the base station for a bulletin board or electronic mail system.

And the unit provides full-duplex communications at both 300 and 1,200 bps via acoustic cups. Since travelers often find themselves in hotel rooms and phone booths that lack modular telephone jacks, this is a key capability in a portable modem. It's also quite a technological trick; most full-size modems, even those costing hundreds of dollars, don't communicate at 1,200 bps with acoustic cups. Touchbase advises that use of acoustic cups reduces battery life to eight hours instead of 10.

THE BOTTOM LINE

The WorldPort 1200 comes with a two-year warranty covering defects and materials and workmanship. It's a solid little system; I've carried mine around loose in a briefcase and in my jacket pocket with no ill effects. It weighs just 6.5 ounces.

The WorldPort 1200 was designed by the same engineers who created the TravelComm 1200, an earlier unit that lacked CCITT protocols, full Hayes compatibility, an acoustic cups option, and extended user status reporting. The same company still markets an internal 300-bps modem option for the NEC PC-8201.

The unit I received for review is called a "WorldLink 1200," and much of the documentation refers to the product by that name. The name has been changed to WorldPort 1200, probably for reasons having to do with trademark registration. But the two products are the same. Reviews you have read concerning the WorldLink 1200 are applicable to the WorldPort 1200; only the name has been changed.

Editors get a lot of evaluation equipment shipped to them for review. Much of it never makes it out of the shrink-wrap. Of the rest, most gets used for a little while, written up and shipped back to the manufacturer.

But I'm not giving up my WorldPort 1200 — my check's in the mail to Touchbase Systems. I'm retiring the cable for my 100's internal 300-bps modem, effective immediately.

The Touchbase Systems WorldPort 1200 is fully compatible with the Model 100, Tandy 102, Tandy 200, Olivetti M-10 and NEC PC-8201, as well as any computer that has a serial port with a DB-25 connector. At $199, it's a bargain.

Contact Touchbase Systems, 16 Green Acre Lane, Northport, NY 11768, (516) 261-0423.

CIRCLE NO. 49

J.D. Hildebrand is the editor of Laptop User.

6 ROM BANK

Peek (100)

I recently buckled a 6 ROM Bank onto my Model 100 and I feel 10 feet tall. All six of the 11.5 by 2.75 by 2.5-inch unit's ROM sockets contain firmware applications programs, giving me near-instant access to an incredible wealth of software: Super ROM, Ultimate ROM II, Lucid, TS-DOS, Disk+ and RAM+ (yes, I've also installed the PCSG/Cryptronics 96K memory upgrade, giving me four 32K banks of RAM).

My battered 100 doesn't know what hit it. All told it contains 128K of RAM and 224K of ROM-based programs — about as much memory as the PC clone I use for editing *Laptop User*.

Moreover, the 6 ROM Bank's rechargeable batteries are now powering my 100. When the low-battery light comes on I can just plug in the AC adapter and charge it up. A 90-minute quick charge will give me six hours of use, and if I leave the unit plugged in for six hours or more I'll have 30 hours of worry-free computing.

The 6 ROM Bank is manufactured by American Cryptronics Inc. of Costa Mesa, California and marketed by Portable Computer Support Group in Dallas. Although it's been on the market for more than a year, you don't see too many of them around. In a way, that's not too surprising. Plug-in programs for the Model 100 are still scarce and pricey, and for many people the availability of multiprogram ROMs eliminates the need for multiple banks. (To fill mine up I've got two copies of PCSG's Lucid spreadsheet program installed: one on its own chip and one built into Super ROM.) The firmware I've got plugged into the 6 ROM Bank would retail for a hair under $800, I figure, and there probably aren't too many Model 100 diehards willing to pop for that much software. So the need for the product — to allow users near-instant access to a multiplicity of ROMs — is not widespread. Still, as ROMware becomes more affordable and a wider variety of programs becomes available, more and more laptop users will need the 6 ROM Bank.

INSTALLATION

The 6 ROM Bank attaches to the Model 100 with two pegs that poke into cylindrical holes in the bottom of the computer — the same holes that ordinarily hold prop-legs or broken-off pencils to tilt the 100 to a comfortable typing angle. When the 6 ROM Bank is installed, it takes the place of prop-legs, elevating the back of the Model 100 by about 2.5 inches to provide a convenient angle for typing and for reading information on the computer's liquid crystal display.

Snaking out of the unit is a flat ribbon cable that terminates in a plug. To install the 6 ROM Bank, the user must push the plug into the auxiliary ROM socket located under the hatch on the bottom of the computer. It's possible to push the plug into the socket backwards, but only if you disregard the installation instructions and plug it in before poking the pegs into the prop-leg holes. If you follow the installation instructions in order, there's no chance of messing up — the ribbon cable is precisely the right length for correct installation, too short to allow you to push the plug in backwards.

Once you've installed the plug in the 100's auxiliary ROM socket, you can replace the hatch on the bottom of the computer. The ribbon cable sticks out under the hatch, much the same as a note from the landlord sticks under your door. On my 100, this makes the hatch bulge outward a bit, somewhat reducing its security. It's much easier to pop the hatch off with the ribbon cable in place than it was before I installed the 6 ROM Bank. Still, it's secure enough so I don't worry about it popping off unexpectedly.

The next step is to plug a small cable that hangs out of the 6 ROM Bank into the AC adapter port on the side of the Model 100. This lets the computer run off the 6 ROM Bank's internal power supply, which is rechargeable. The 100's AC adapter plugs into a port on the side of the 6 ROM Bank.

The fourth and final step of the installation is optional. PCSG provides a velcro-type loop that affixes to the bottom of the Model 100 with adhesive. The loop opens to release the ribbon cable and closes to hold it flat against the bottom of the computer. The ribbon cable that came with my 6 ROM Bank is exactly the right length, so it already lies flat. I attached the velcro strip anyway. It doesn't seem to harm anything, and I can always pull it off my 100 if I decide I don't want it there anymore.

The entire installation takes about a minute, even if you decide to use the velcro strip to secure the ribbon cable in place. Removing the 6 ROM Bank — which I must do if I want my 100 to lie flat in my briefcase — also takes less than a minute. It couldn't be easier.

However, the ease with which the 6 ROM Bank may be removed and reinstalled is somewhat troublesome. The plug that fits into my 100's auxiliary ROM socket has sharp edges; after installing and removing the plug just a few times I could see that it had scratched the soft metal connectors in the ROM socket. It's easy to see that without proper care, frequent installation and removal could eventually bend the connector pins or even break them off. I don't know if there is any real danger of this or if it has ever happened to anyone, but I don't intend to make a habit of jerking the plug out and jamming it in. Better safe than sorry, I say.

OPERATION

The 6 ROM Bank operates exactly the way the documentation and PCSG's advertisements say it should. No bugs or glitches have presented themselves after a week of use, and I don't anticipate having any trouble with it. The product's black plastic housing seems to be at least as rugged as the Model 100 itself, and the pegs hold it securely in place even

when I pick up the computer and give it a good shake.

The 6 ROM Bank manual provides accurate tips for preventing a cold-start that could banish the 100's memory contents to bit heaven. It's very important to exit from any program (in RAM or on a ROM), return to the Model 100's main menu and turn the computer off before changing from one ROM bank to another. Any deviation from this procedure results in a cold-start and data loss, exactly as PCSG's manual states.

Once the Model 100 is switched off, you change from bank to bank by turning a thumbwheel located on the side of the 6 ROM Bank. The thumbwheel operates much like the 100's LCD contrast control and is located near it. I will admit that I once attempted to adjust LCD contrast and inadvertently switched banks while working on a Lucid model. My spreadsheet disappeared, as did an earlier draft of this article and my copy of Marvin Miller's lengthy EM8SIG electronic mail program. I can't say they didn't warn me.

It's also important not to select an empty ROM bank with the thumbwheel. If you have ROMs in the 6 ROM Bank's first three sockets, selecting socket four will cold-start the computer.

The first time the 6 ROM Bank is used, it's necessary to enter BASIC and issue the appropriate CALL to activate the option ROM and add the new program name to the Model 100's main menu. The appropriate command is generally CALL 63012 for most ROMs.

Surprisingly, this initialization must be performed just once, no matter how many ROMs are installed in the 6 ROM Bank.

One feature of the 6 ROM Bank's operation is somewhat disconcerting, even though it isn't a malfunction and the documentation should have prepared me for it. Whenever you switch banks and turn the computer back on, the Model 100's main menu displays the name of the ROM application you used last, not the one you just selected.

So if you spend some time working on a Lucid spreadsheet, store it, turn the computer off and use the thumbwheel to select the ROM bank that holds Disk+, the main menu will still show Lucid as a program choice — and it won't show Disk+. But when you move the wide-bar cursor to Lucid and press Enter, you find yourself running Disk+!

This idiosyncracy of 6 ROM Bank operation takes some getting used to. I've solved it for myself by selecting the option ROM program every time I turn my 100 on, then immediately exiting from the program. This updates the menu listing so the ROM program displayed is the one that's actually available. I recommend this procedure to current and prospective 6 ROM Bank users — no charge.

The situation gets even more complicated when you use the 6 ROM Bank to access ROMs from PCSG's competitors. These programs don't delete themselves from the main menu after you run another ROM — they stay there, even though they're no longer active.

THE BOTTOM LINE

Because the 6 ROM Bank plugs directly into the Model 100's auxiliary ROM socket, bypassing the system bus, there is no apparent reason for it to fail to work with the Tandy 102. However, we haven't tried it. Nor have we tried it with the Tandy 200, though PCSG has advertised a 200-compatible version.

After a week or so of use, I'm left with no serious complaints about the 6 ROM Bank. I've found the freedom it gives me to select any of six option ROMs within seconds is addictive; the built-in battery charger is a bonus. The curiously out-of-date main menu display is more annoying than damaging, and I'm not convinced that the unit can cause any real damage to my 100's auxiliary ROM socket, though I'll be watching for it. I'm certain that once I become more accustomed to using the product (and the location of the bank-selection thumbwheel) cold-starts will be a thing of the past.

Should you buy a 6 ROM Bank? Maybe. I'd recommend it for anyone who uses multiple ROM-based programs more than occasionally, even though it is fairly expensive. Removing and installing ROMs, no matter who makes them, puts more wear and tear on the auxiliary ROM socket than I'm comfortable with. The 6 ROM Bank lets you switch from ROM to ROM without risk. Even if installing and removing the ROM bank is tough on the socket, odds are you'll be removing the 6 ROM Bank a lot less frequently than you would change ROMs if you rely on more than one.

Today, most users don't need the 6 ROM Bank for the simple reason that they don't have more than one ROM. But as prices drop and more firmware applications are released, you're likely to find yourself relying on several ROM-based programs. When that day comes, you'll find the 6 ROM Bank indispensable. Until you've tried it, you'll never understand how much it expands the Model 100's power and versatility.

You'll find that it makes you feel taller, able to leap tall buildings at the touch of a function key. If you're balding, you'll grow more hair. You'll gain a few IQ points, and you'll suddenly be better looking.

Well, maybe not. But it is likely that you'll meet interesting new people who will be fascinated at the power of the tiny computer you're carrying around with you.

The American Cryptronics/PCSG 6 ROM Bank retails for $199. It's available from Portable Computer Support Group, 11035 Harry Hines Blvd., No. 207, Dallas, TX 75229, (214) 351-0564.

CIRCLE NO. 48

Laptop Users

PHILIP FRANK, PHILADELPHIA, PENNSYLVANIA

Philip Frank initially bought a NEC PC-8201 to teach himself BASIC, a goal he continues to work toward today. Meanwhile, he's been pleasantly surprised by the computer's versatility, particularly since he added Ultimate Rom II from Traveling Software Inc.

Frank reports that he used the 8201 constantly during three years of on-the-road systems analysis and productivity-improvement consulting, when he found the computer "indispensable for telecommunications."

When the traveling became tiresome, Frank gave it up to take a job coordinating meetings for the University of Pennsylvania's Wharton School. "I don't really miss the traveling I did on my old job, but I do kind of miss getting messages on the 8201," says Frank.

At Wharton, Frank deals with corporations coming to give seminars, secures meeting rooms, contacts the appropriate professors and arranges catering services. The 8201 has taken a back seat at his new job, where he uses it only occasionally as a peripheral to his desktop computer. But the laptop still figures prominently in the businesses he runs from his home, where he uses it with an Epson HX-80 to write business letters and print invoices.

"I handle mailing lists for guest houses in the Philadelphia area," says Frank. "Since most of them don't like to relinquish their registration books, I need to do on-site data entry. I enter all the names and addresses on my 8201 and dump the data to my desktop when I get home."

When he's not coordinating meetings or working on guest house mailing lists, Frank is cooking up a new project: he's hoping to sell templates that go with stock databases that would set up reservation and registration systems for guest houses. "I've already completed one template for the Apple II," Frank says. "And I'm working on another for IBM compatibles."

PHILIP CARACENA, COLORADO SPRINGS, COLORADO

Philip Caracena, Ph.D. gets called away from his private psychotherapy practice more and more lately. Carrying one of his two Model 100s, he visits recently-hospitalized psychiatric patients to administer a variety of diagnostic tests at the request of the patients' treatment teams.

"Treatment planning meetings happen quickly after a psychiatric patient is admitted," explains the clinical psychologist. "The patients are in there for acute reasons, so the team needs information fast. I administer psychological tests, enter the scores on the 100 and send them over TELCOM to an interpretive service."

Caracena's use of a computer in his psychological work is part of a growing trend. "There's a movement in the field toward using straight computer testing without complementing the data with subjective observations," says Caracena, who feels strongly that such tests should not be given by untrained people. "The human factor is important in giving psychological tests," he explains. "Psychological tests have limitations. Many statements they make apply to a group, but a variety of additional factors must be considered when testing an individual."

Caracena incorporates the results sent back to him into reports he writes on the Model 100. "I get fast results for people who need fast consultations," he says. He hopes that his fast turn-around time will keep him competitive with others who provide computer-administered tests without the context of a complete report.

One of Caracena's favorite tests is the Rorschach ink blot test, in which people look at an ink blot and say what they see. While psychologists' interpretations of their clients' responses used to be very subjective, says Caracena, now the test is much more empirical. "A psychologist used a computer extensively to compile test results and to improve the scoring system," he says.

Caracena records patients' responses with a character set of 25 or 30 numbers and symbols. Meaningless by themselves, when sent to an interpretive service in Minneapolis via TELCOM the responses can be compared with thousands of test results whose subjects have known psychological characteristics.

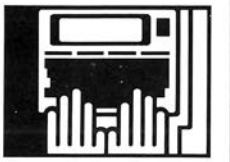
Caracena finds this testing method to be so useful that he's working on a manual for its use which he hopes to publish within the next year. Part of the effort, he says, is to "find better ways to assemble consultation reports." He hopes that psychologists like himself who invent or use computerized tests don't use the computers' responses perfunctorily, but remember to incorporate the computer feedback creatively.

An ex-ham radio operator, Caracena says the Model 100 also meets some of his hobbying needs. "The 100 is a hobby in itself," he says. "It's a game to see how far I can stretch its use." He's pushing the machine's limits by trying various programs and games, and keeping up with new products.

Caracena doesn't anticipate outgrowing his 100 until he intensifies efforts in his Rorschach manual-writing project this summer. Meanwhile, he has an IBM-PC compatible desktop computer that sits quietly in his house, collecting dust.

WALTER SCOTT & KAREN MORTON, KNOXVILLE, TENNESSEE

You may remember Dr. Bunson Honeydew and his assistant Beaker from the Muppets, the stars of public television's



Sesame Street who went on to Hollywood box-office fame. Namesakes of Honeydew and Beaker reside in the Knoxville home of Walter Scott. The Knoxville Beaker — who looks a lot like a Model 100 — assists Scott in telling Dr. Honeydew — who looks a lot like a Heath H-8 minicomputer — how to adjust his home control program.

"Dr. Honeydew wakes me up in the morning, turns the heat on in the bathroom about 10 minutes before I need to use it, and starts the coffee maker. He checks the mailbox and tells me when mail has arrived, alerts me to the arrival of visitors at our front gate, controls the air conditioning, and reminds me of birthdays and anniversaries," explains Scott.

Beaker accompanies Scott and wife Karen D. Morton on their frequent business and recreational travels. Dr. Honeydew stays home, of course, turning lights on and off to deter potential house thieves. Scott utilizes Beaker's telecommunications abilities to tell Dr. Honeydew when to turn on lights or air conditioning for their arrival back home.

Beaker serves many other purposes, says Scott, an electrical engineer with the Tennessee Valley Authority. Scott's current focus at work is the Atmospheric Fluidized Bed Combustion Demonstration Project; that is, he's helping design a coal-fired power plant that will burn high-sulphur-content coal efficiently and cleanly, without the need for expensive scrubbers. "I use Beaker for writing memos and for a lot of the tedious number-punching in my programming design work," explains Scott. Uploading data from the 100 is far more cost-efficient than entering it directly into the TVA's Chattanooga mainframe.

"For technical writing," says Scott, "I use the 100 almost exclusively." Scott takes notes on Beaker in business meetings. "Nobody has objected to my using the 100 in meetings," Scott says, "but I do get some raised eyebrows. Some guys tease me about taking notes that way, but a couple have been inspired to get their own laptop computers."

Beaker has a counterpart Model 100 named Cassandra that accompanies Karen Morton, a programmer and technician who works with dBASE II. Cassandra isn't much help in dBASE II programming, but does earn her keep at home, where Morton uses her for writing science fiction.

Married about a year ago, the couple had met at — you guessed it — a computer users group meeting. "The computers are our kids," says Scott, who claims that Dr. Honeydew hasn't misbehaved in a couple of years. "We're very pleased with our computers — and very dependent on them. Honeydew's system has been evolving since about 1981. He runs continuously now, doing about 16 different tasks. A few years ago he turned the lights out when I was outside at night, and once he turned on the air conditioning on just about the coldest day in winter. Otherwise, he hasn't been any trouble at all."

RICHARD WENER, MAPLEWOOD, NEW JERSEY

Consulting environmental psychologist Richard Wener researches the influence of physical design on people living or working in various types of spaces. His clients include jails and prisons that have incorporated a new type of architecture called "direct supervision." These innovative designs eliminate the need for bars, glass or cement block walls that separate inmates from the officials supervising them. The new designs often resemble dormitory rooms that open onto group living areas and facilities. Supervisory staff members mingle with inmates in these communal living areas.

"You might expect that the staff would be at risk in such a setting," says Wener, "but my observations indicate otherwise. The innovative designs encourage better communication between inmates and officials. With the proper training provided to jail and prison officials, the level of tension, violence and vandalism in these modern facilities is significantly less than in conventionally designed institutions."

To aid in his research, Wener uses his Model 100 with a program of his own devising that allows him to code behaviors and types of physical spaces. "I can use a code to note what someone is doing and where he is doing it," explains Wener.

Wener can then use the data in several ways. "I can print out the raw data, cross-tabulate behaviors by types of physical spaces, or look at the range of behaviors that occur in a particular type of space."

Wener has yet to introduce the 100's role in research to the graduate students he teaches at Polytechnical University in Brooklyn, New York. "I only have one Model 100," he says, "and it's fully loaded with data." He hopes to purchase several more laptops soon for teaching purposes.

The 100 does go with him to the school's library for taking notes, as well as on plane trips and to other consulting jobs he does for private companies. "Employees in large firms usually have no control over designing their own work space," Wener says. "My job there is to interview employees, observe how they work and get them to participate in redesigning their own work environment."

When using his Model 100 on the road, Wener sometimes finds himself the object of other people's behavioral observations. "The 100 is a good conversation starter on planes and trains," notes the psychologist, "although it's becoming less of a phenomenon as laptops become more popular."

DENNY THOMAS, HOLLYWOOD, CALIFORNIA

Denny Thomas, an electrical engineer at Capitol Records' Hollywood headquarters, discovered the Model 100 after

getting burned out on 10 years of high-pressure professional programming at the mainframe level. "This would be a cute little guy to mess around with," he thought when he saw a 100 on sale about a year and a half ago. He bought the machine, obtained a subscription to CompuServe and has been a Model 100 zealot ever since.

Thomas joined Capitol's crew of engineers to help build, repair and maintain the company's three recording studios, six editing rooms and two disc mastering rooms. When the manufacturer of Capitol's minicomputer showed him how they run diagnostics using the Epson Geneva laptop computer as a terminal, Thomas caught on quickly and wrote similar utilities on a Model 102. "Instead of buying a Geneva, which I consider a useless machine, I rewrote the diagnostic programs on the machine I was already familiar with." Thomas also uses the 102 to write technical manuals for Capitol's complex CD equipment.

Two Model 100s keep Thomas busy at home. "I use one with a Chipmunk disk drive as a desktop computer for programming and for communicating with CompuServe and several bulletin boards," he explains. The other goes with him in his briefcase, along with a Tandy Portable Disk Drive. "The Tandy (disk drive) is a better deal than the Chipmunk for travel because it weighs less," opines Thomas.

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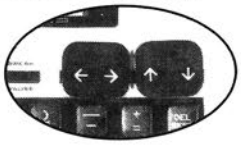

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Thomas serves on the Club 100 BBS advisory board, where he's working to get permission from programmers to upload their work. His vast experience with the 100s allows him to assume what he calls "a guru posture" on the BBS — he helps out others more than he receives assistance himself — and mostly he does it, he says, because it's a lot of fun.

Like Philip Frank, Thomas dreams of becoming self-employed. But expanding his horizons in the music field would probably mean moving to Nashville, New York, Los Angeles or perhaps London — moves he wouldn't relish. "And I can't get excited anymore about the mainframe environment," he says, after having looked into learning higher-level languages in order to qualify for corporate programming projects.

Programming for laptops, on the other hand, has captured his interest: "The challenge is to make them do something that doesn't seem possible, to create software like Traveling Software's T-Word, which I think is the best word processor on the planet."

Thomas says he misses the creativity involved in programming. "Previously, I did my own system analyses, wrote and researched my own applications, assembled whole packages. That was back in 1975 when no standards like Lotus [1-2-3] existed. I'm more interested in doing the whole system than just nuts and bolts." So what holds him back? "The idea of starving," he laughs.

A. ALAN POUND, LILBURN, GEORGIA

What does Alan Pound do with his laptop? "It would be easier to tell you what I *don't* do with it," he replies. A salesman with a nationwide organization of manufacturers' representatives, Pound lists at least 20 tasks he accomplishes with his 100 before I can't keep up with him. "It's my notepad, alarm clock, typewriter, telephone book, calendar... It's sitting on my lap right now. I was just entering some personal expenses when you called," he says.

Pound rarely pulls the 100 out of his briefcase during a sales call, since his hunt-and-peck typing style interferes with maintaining eye contact with his customers. "I'll only take it out to check my schedule or consult a customer's file," he explains.

Outside the customer's office, however, the 100 is almost always at his fingertips. "I have 20 years of experience selling," says Pound, "and for 17 of them I wrote lots of notes that got lost. I couldn't keep track of customers' orders, phone numbers, addresses or anything else. That inspired me to get into computing."

His goal in purchasing the Model 100 three years ago was "to look like I'm always in an organized office, even though I spend two to three days a week on the road. With the 100, I think I've come close to achieving that. I'm much more organized now — though some people might dispute that!"

About a year ago Pound left his sales position to become his own boss, and now he feels a need to be more organized than ever. "The Model 100 has helped me to survive that move," he says.◀

Freelance writer Deborah Davis is the former editor of VAR, *a monthly magazine for value-added resellers of computer equipment and software. Today she writes children's books at her home in Camden, Maine.*

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Write ROM — the definitive word processor for the Model 100. Function key formatting or dot commands. Search and replace. Library feature — inserts words, phrases or whole documents into text from just a code. MAP lets you see a picture of your document. In all there are 60 features and functions. No one can claim faster operation. FORM lets you create interactive forms with on-screen prompts that you can answer from the keyboard. Nothing else for the Model 100 compares with the features of Write ROM. Exactly the same as the Write ROM sold as a single program. Infoworld says it "makes the Model 100 a viable writing unit ... surpassed our highest expectations for quality and clarity."

Lucid Spreadsheet: This is the one PICO magazine says "blows Multiplan right out of the socket" and Infoworld performance rated as "excellent" and said "makes the Model 100 compute." Gives you features you cannot get with Lotus 123. Lets you build spreadsheets in your Model 100 that would consume 140-150K on a desktop. Program generating capability with no programming knowledge required. Variable column widths. Includes find and sort with function key control. It's fast, recalculates like lightning. No feature has been taken from the original, only new ones added.

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